

# **Wyboo Plantation UTILITIES, INC.**

## **Article 1.**

### **GENERAL OPERATING INFORMATION**

#### **SECTION 1.0      GENERAL**

Wyboo Plantation UTILITIES, INC. reserves the right to modify, amend or delete any portion of this Regulations and Procedures Manual any time and without any written notice. Wyboo Plantation UTILITIES, INC. (herein after referred to as “WP UTILITIES, INC.”) also reserves the right to legally change its name of the company and all references to such name shall be incorporated and substituted into its Regulations and Procedures Manual.

#### **SECTION 1.1      DEFINITIONS**

Unless the context specifically indicates otherwise, the meaning of terms used in this ordinance shall be as follows:

1. BOD - denoting biochemical oxygen demand, shall mean the quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedures, five days at 20 deg. C., expressed in milligrams per liter and as further defined in Standard Methods.
2. BUILDING DRAIN - shall mean that part of lowest horizontal piping of a drain system which receives the discharge from soil waste and other drainage pipes inside the walls of the building and conveys it to the building sewer, beginning 5 ft. outside the inner face of the building wall.
3. BUILDING SEWER - shall mean the extension from the building drain to the public sewer or other place of disposal.
4. EPA - shall mean the United States Environmental Protection Agency.
5. GARBAGE - shall mean solid wastes from the domestic and commercial preparation of cooking and dispensing of food from the handling, storage, and sale of produce.
6. GENDER - a word importing masculine gender only, shall extend and be applied to females and firms, partnerships and corporations as well as males.

7. INDUSTRIAL WASTES - shall mean the liquid waste from industrial manufacturing processes, trade or business, as distinct from sanitary sewage.
8. NATURAL OUTLET - shall mean any outlet into watercourse, pond, ditch, lake or other body of surface or groundwater.
9. PERSON - shall mean any individual, firm, company, association, society, corporation or group.
10. pH - shall mean the logarithm of the reciprocal of weight of hydrogen ions in grams per liter of solution.
11. PROPERLY SHREDDED GARBAGE - shall mean the waste from the preparation of cooking and dispensing of food that has been shredded to such a degree that all particles will be carried freely under the flow conditions normally prevailing in public sewers with no particle greater than 3/8 inch in dimension.
12. PUBLIC SEWER - shall mean a sewer in which all owners of abutting properties have equal rights and is controlled by public authority.
13. SANITARY SEWER - shall mean a sewer, which carries sewage to which storm, surface, and ground waters are not intentionally admitted.
14. SEWAGE - shall mean a combination of water-carried wastes from residences, business buildings, institutions and industrial establishments, together with such ground, surface and storm waters as may be present.
15. SEWAGE TREATMENT PLANT - shall mean any arrangement of the devices and structures used for treating sewage.
16. SEWAGE WORKS - shall mean all facilities for collecting, pumping, treating, and disposing of sewage or industrial wastewaters.
17. SEWER - shall mean a pipe or conduit for carrying sewage.
18. SEWER SURCHARGE - shall mean a charge for sewer service and treatment service for wastes having characteristics different from sanitary wastes and for which additional charges must be assessed in order to compensate for additional expenses incurred.
19. SHALL - is mandatory, MAY is permissive.
20. SLUG - shall mean any discharge of water, sewage or industrial waste which in concentration of any given constituent or in quantity of flow exceeds, for any period of duration longer than 15 minutes, more than five times the average 24-hour concentration occurring during normal operation.

21. STANDARD METHODS - shall mean the examination and analytical procedures set forth in the most recent edition of Standard Methods for the Examination of Water and Wastewater, published jointly by the American Public Health Association, the American Water Works Association, and the Water Pollution Control Federation.
22. STORM DRAIN - sometimes termed storm sewer shall mean a sewer, which carries storm and surface waters and drainage but excludes sewage and industrial wastes.
23. STREET - The word "street" shall be construed to embrace streets, avenues, drives, boulevards, roads, alleys, lanes and viaducts and all other public highways in the sanitary area.
24. SUSPENDED SOLIDS - shall mean solids that either float on a surface of or are in suspension in water, sewage, or other liquids which are removable by laboratory, filtering and is further defined in Standard Methods.
25. TOTAL SOLIDS - shall mean the sum of suspended matter, settleable matter and dissolved matter, both volatile and nonvolatile and as further defined in Standard Methods.
26. CITY - The City of Manning, South Carolina.
27. TREATMENT WORKS - shall mean all facilities for collecting, pumping, treating, and disposing of sewage or industrial wastewaters.
28. WATERCOURSE - shall mean a channel in which flow of water occurs, either continuously or intermittently.
29. PUBLICLY OWNED TREATMENT WORKS ("POTW") - shall mean a treatment works as defined by Section 212 of the Act, (33 U.S.C. 1292) which is owned in this instance by a private utility company. This definition includes any sewers that convey wastewater to the POTW treatment plant, but does not include pipes, sewers, or other conveyances not connected to a facility providing treatment.
30. SIGNIFICANT INDUSTRIAL USER - shall mean any person discharging into the public sewer which:
  - (1) Is subject to categorical pretreatment standards under 40 CFR Part 403.6 and 40 CFR Chapter I, Subchapter N, as promulgated by the U.S. Environmental Protection Agency; or

- (2) Contributes a process waste stream which makes up five percent or more of the average dry weather hydraulic or organic capacity of the WP UTILITIES, INC. sewage treatment plant; or
- (3) Discharges an average of 25,000 gallons per day or more of process wastewater excluding sanitary, non-contact cooling and boiler blow-down wastewater
- (4) Has in the opinion of WP UTILITIES, INC., a reasonable potential to adversely affect the operation of WP UTILITIES, INC. sewage treatment plant or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f) (6)).

31. SIGNIFICANT VIOLATION - shall mean a violation of discharge limitations that meets one or more of the following criteria:

- (1) Chronic violations in which sixty-six percent or more of all of the measurements taken during a six month period exceed the limitation for the same parameter;
- (2) Technical review criteria (TRC) violation in which thirty-three percent or more of all of the measurements taken during a six month period, except pH, exceed limitation by a magnitude of the TRC (TRC = 1.0 for BOD, TSS, fats, oils and grease; TRC = 0.5 for all other parameters);
- (3) Any violation of a discharge limitation which WP UTILITIES, INC. believes has caused, alone or in combination with other discharges, interference or pass-through including endangering the health of POTW personnel or the general public;
- (4) Any discharge of a pollutant that has caused imminent endangerment to human health, welfare or to the environment or has resulted in the exercise of the WP UTILITIES, INC. emergency authority to halt or prevent such a discharge;
- (5) Any violation by ninety days or more after the scheduled date of any compliance schedule milestone contained in the Wastewater Discharge Permit;
- (6) Failure to provide the required pretreatment program reports within thirty days of the due date;
- (7) Failure to accurately report noncompliance;

- (8) Any other violation or group of violations, which WP UTILITIES, INC., determines will adversely affect the operation or implementation of the pretreatment program.
32. All other words shall be construed as having the meaning defined in Glossary Water and Sewage Control Engineering, published by the Water Pollution Control Federation, Washington, D.C., or by their general usage, if undefined.

## **Article 2.**

### **SUBMISSION OF PLANS**

#### **SECTION 2.0. GENERAL**

All reports, final plans and specifications should be submitted at least two (2) weeks prior to the date on which action by Wyboo Plantation UTILITIES, INC. (hereinafter referred to as "WP UTILITIES, INC.") is desired. Preliminary plans and the engineer's report may be submitted for review prior to the preparation of final plans. No approval for construction can be issued until final, complete, detailed plans and specifications have been submitted to the reviewing authority and found to be satisfactory. All plans for projects located within the WP UTILITIES, INC. limits must be submitted through the Planning Commission in accordance with WP UTILITIES, INC. Regulations. Documents submitted for formal approval shall include, but not be limited to:

- ? Summary of the basis of design where applicable.
- ? Operation requirements where applicable.
- ? General layout.
- ? Detailed plans.
- ? Specifications

#### **2.0.1**

#### **SECTION 2.1. ENGINEER'S REPORT**

The engineer's report for improvements should, where pertinent, present the following information:

##### **2.1.1. General information, including:**

- ? Description of existing facilities (water works, sewerage facilities, etc.).
- ? Identification of the area served.
- ? Name and mailing address of the owner or developer.

##### **2.1.2. Extent of proposed system, including**

- ? Description of the nature and extent of the area to be served.
- ? Provisions for extending the proposed system to include additional areas.

- ? Appraisal of the future requirements for service, including existing and potential industrial, commercial, institutional and other needs.
- 2.1.3. Alternate Plans – where two or more solutions exist for providing service, each of which is feasible and practicable, discuss the alternate plans and give reasons for selecting the one recommended, including financial considerations.
- 2.1.4. Soil, ground water conditions, and foundation problems, including:
  - ? Description of the character of the soil through which water mains are to be laid.
  - ? Description of foundation conditions prevailing at sites of proposed structures.
  - ? Description of the approximate elevation of ground water in relation to subsurface structures.
- 2.1.5. Water consumption and sewage generated, including:
  - ? Description of the population trends as indicated by the estimated population, which will be served by the proposed system.
  - ? The estimated number of new lots to be served each year until the subdivision is “built out.”
- 2.1.6. Fire flow requirements, including:
  - ? Requirements of the American Insurance Association and related agencies as to fire flows required or recommended in the service area involved (where applicable).
  - ? Fire flow, which will be made available to the proposed or enlarged system. (see, design criteria, Article 3, Section 3.1).
- 2.1.7. Sewerage system available – Describe the existing system and sewage treatment works, with special reference to their relationship to existing or proposed water works structures which may affect the operation of the water supply system, or which may affect the quality of the supply.
- 2.1.8. Automatic equipment – Provide supporting data justifying automatic equipment, including servicing requirements, pump curves and operation manuals.
- 2.1.9. Project site, including:
  - ? Discussion of various sites (pumping stations, etc.) considered and advantages of the recommended ones.

- ? Proximity of residences, industries, and other establishments.
- ? Presence of any potential sources of pollution that may influence the quality of the supply or interfere with the effective operation of the water works system, such as sewage absorption systems, septic tanks, privies, cesspools, sink holes, refuse and garbage dumps, etc.

2.1.10. Financing, including:

- ? Estimated cost of integral parts of the system.
- ? Detailed estimated annual cost of operation.

2.1.11. Future Extensions – summarize planning for future needs and service, including:

- ? Easements for future expansion of the water and sewer systems to serve adjacent property. These must be reserved at 600' intervals along the boundary of the property to allow future connection to the system being constructed within the subdivision. Reasonable deviations from the 600' rule to allow alignment with future streets, property lines, etc. will be considered.
- ? Easements for water, sewer and facilities shall be provided on private property. In new subdivisions, easements may be within street rights-of-way provided the easement predates the filing or recording date of the subdivision plat. Other exceptions are made for temporary lines and deep sanitary sewer lines where there is little probability of future grade conflict with highway construction. These must be justified in detail.
- ? Easements for water main, sanitary sewer, extensions to serve a new area must be provided by the developer unless specifically addressed in the extension agreement between WP UTILITIES, INC. and developer.

## SECTION 2.2. PLANS

Plans for improvements should, where pertinent, provide the following:

2.2.1. General layout, including:

- ? Suitable title.
- ? Name of municipality.
- ? Vicinity map drawn to 1" = 1,000' scale of the area or institution to be served (See example Exhibit 2.7). This applies only to water construction plans.



- ? Scale in feet.
- ? North point.
- ? USGS datum.
- ? Boundaries of the municipality or area to be served, including boundaries of any proposed phasing.
- ? Date, address and name of the designing engineer.
- ? Imprint of seal and signature of professional engineer.

2.2.2. Detailed plans, including but not limited to:

- (1) Topographical map of the property, sometimes referred to as a site development plan, showing lot layout, lot and block numbers, street width and names, etc., is to be used as a base map. Upon this base map is to be superimposed the system being designed, i.e., water, sanitary sewer or storm drain.
- (2) Construction plan and profile sheets must be drawn to a scale of not less than 1"=100'. They must carry the seal and signature of a professional engineer registered in the State of South Carolina one each sheet. The plan sheet size shall be 24"X36". These plans are not be confused with the requirements in Paragraph (1) above.
- (3) The plans must show the proposed name of the subdivision, owner and/or sub-divider, graphic scale, north point and date.
- (4) The plan shall show the acreage to be subdivided, and the boundaries of the tract with all bearings and distances indicated. The boundary survey shall be to such a degree of accuracy that the error of closure shall comply with the standards set forth by the South Carolina Board of Engineering Examiners.
- (5) Existing conditions to be show shall include:
  - (a) Topography by contours at vertical intervals of not more than five (5) feet. Means Sea Level Datum is Required and this must be so stated on the plans. In those instances where mean sea level bench datum is not reasonably close, WP UTILITIES, INC. will set a bench at or near your proposed work.
  - (b) In case of re-subdivision, a copy of the existing plat with proposed re-subdivision superimposed thereon.

- (c) Location of streams, lakes, swamps and land subject to flooding based on 100- year frequency flood.
  - (d) Location of existing property lines on adjoining property and buildings on the property to be subdivided.
  - (e) Location and rights-of-way of streets, roads, railroads and utility lines either on or adjacent to the property to be subdivided. Specify whether utility lines are in easements or street rights-of-way and show location of poles or towers.
  - (f) Size and location of existing sewers, water mains, drains, culverts or other underground facilities within the street or within the rights-of-way of streets or roads adjoining the tract. Grades and invert elevations of existing sewers shall be shown.
  - (g) The acreage of each drainage area affecting the proposed subdivision, both onsite and offsite.
  - (h) All elevations shall be expressed in Mean Sea Level Datum and so indicated on the plans.
  - (i) Location of the WP UTILITIES, INC. lines, county lines, if applicable.
- (6) Proposed conditions to be shown shall include:
- (a) Layout of streets, roads and alleys, with widths and road names.
  - (b) Construction plans for streets showing natural and finished grades and cross-sections (if applicable).
  - (c) Layout of all lots; scaled dimensions on lots; lot and block numbers, existing-utility easements with width and use.
  - (d) Construction, plan and profile for sanitary sewers (if applicable) with grade, pipe size and material, location of manholes and points of discharge.
  - (e) Plan and profile for water distribution (with meter installations) system with grade, pipe sizes, material, and location of outlets. Sediment and Erosion Control measures and storm drains shall be designed in accordance with WP UTILITIES, INC. Plans shall show sufficient off-site information and include method and computations where indicated. Transmittal letter shall include the statement by a registered engineer or architect that sediment and

erosion control design meets the requirements of W P Utilities, Inc.'s regulations. For certain projects as defined in state law, a duly registered landscape architect may sign the certification.

- (f) Construction plans for water supply system with pipe sizes, material and location of hydrants and valves. The site development plan is acceptable for this purpose provided the plan is on 24"x36" sheets. Otherwise separate water construction plans will be required.
- (7) Submittal Requirements are as follows:
- (a) For projects applying to W P Utilities, Inc., plans must be submitted to W P Utilities, Inc.'s Engineer by mailing to PO Box 2099, Sumter, SC 29151, and payment of applicable fees for processing and review. Submit five (5) copies of sketch plans; seven (7) copies of Preliminary Plat (construction drawings); or five copies of the final plat with one set of record drawings in Mylar form, as applicable. When submitting construction plans for sanitary sewer, submit two extra sets of plans for submittal by W P Utilities, Inc. to SCDHEC for permitting purposes.

### SECTION 2.3. REVISION TO APPROVED PLAN

Any deviations from approved plans or specifications affecting capacity, hydraulic conditions, operating units, the functioning of water treatment processes, or the reviewing authority must approve the quality of water to be delivered, before such changes are made. Revised plans or specifications should be submitted in time to permit the review and approval of such plans or specifications before any construction work, which will be affected by such changes, is begun.

### SECTION 2.4. SPECIFICATIONS

One set of complete, detailed, technical specifications shall be supplied for the proposed project.

### SECTION 2.5. RECORD DRAWINGS

Requirements for record drawings submitted for acceptance by WP UTILITIES, INC. are as follows:

2.5.1. The record drawing shall conform substantially to the approved construction drawings and be submitted in the form of a Mylar marked "record drawing" in the title block. It shall be drawn to a scale not smaller than 1"=100' and will include the following information:

- ? Name of subdivision, and name and address of the fee simple title, holder conveying the improvements and easements to WP UTILITIES, INC.
- ? Graphic scale, north point and date.
- ? Vicinity map (record drawing) drawn to a scale of 1"=100' showing the relationship of the subdivision to the surrounding area. This applies only to water system drawings.
- ? Street names, lot and block numbers.
- ? Tax map sheet number, block number and lot number.
- ? Topography by contours at vertical intervals of not more than five (5) feet depicting final or finished conditions after all construction is complete. Mean Sea Level Datum is required and this must be so stated on the face of the plans.
- ? Sufficient data to determine readily and reproduced on the ground the location, bearing and length of every road right-of-way lien, subdivision boundary line, and block line whether curved or straight.
- ? All dimensions to the nearest one-tenth of a foot and angles to the nearest minute.
- ? Location and description of monuments.
- ? All rights-of-way, easements, and areas to be dedicated to public use with the purpose of each stated.
- ? A signed certificate shall appear on the final record drawing, which is submitted. (See Exhibit 1-A).
- ? Sufficient data to determine and reproduce on the ground the location of all valves, fire hydrants, individual service lines and other appurtenances on water systems. Similar data for sanitary sewer lines, manholes, wyes, etc., shall be shown, including the record drawing plan and profile. Where utility

lines run through easements or rights-of-way their location in relation to easement lines must be shown. Location data shall be referenced to stable physical features such as curb corners, building corners, property corners, etc. Construction line station numbers will not be used as references.

SECTION 2.6.        RESUBMISSION OF PLAN

Construction plan approval shall be valid for only two (2) years. In the event required improvements have not been constructed within that time, the plans must be resubmitted for approval subject to ordinances and regulations in effect on that date.

### Article 3.

#### WATER DISTRIBUTION SYSTEM DESIGN STANDARDS

##### SECTION 3.0. GENERAL

The following water supply planning standards are based on Federal, State and local health requirements and engineering design criteria. "Ten States Standards" shall apply where applicable. All installations, whether public or privately owned, are to deliver water to the consumer which meet the bacteriological and chemical quality standards of the S. C. Department of Health and Environmental Control. If a building is to be constructed, a building permit must be issued by the governing authority. If power is required, the electrical inspector must approve the wiring prior to requesting electrical service from the utility company.

3.0.1. Water mains should not be located in contaminated areas. If a water main must run through a contaminated site, the pipe material must protect the water system from contamination.

3.0.2. These criteria are applicable to all developments including but not limited to residential, commercial and industrial developments, subdivisions and/or parks requiring water service from WP UTILITIES, INC.

##### SECTION 3.1. SYSTEM DESIGN CRITERIA

Distribution mains shall be a minimum 6-inch diameter and arranged so that they are interconnected at intervals such that no loop exceeds 2,400' of 6" C=100 pipe. Hydraulic equivalent lengths of any pipe size are acceptable.

EXAMPLE: The C=100 6" diameter pipe loop is 2,400 feet in circumference (around the block). The maximum equivalent length across this loop

$$EL = L_1 \left[ 1 + \frac{L_1}{L_2} \right]^{.54} - 1.85$$

Equals 332.9 feet. No combination of pipe length and diameter in a loop shall exceed this equivalent length. Thus, the maximum length around an 8" loop will be approximately 9,600 L.F. Distance between fire hydrants will be measured along the traveled way. All water distribution systems shall be designed using C=100 to provide fire protection with minimum requirements as follows:

3.1.1. Low density residential: (4 units or less per acre):

- ? Fire hydrants shall be located at each street intersection and hydrants shall be spaced no greater than 1,000 feet.
- ? The minimum calculated fire hydrant flow shall be 750 gpm plus 75% of peak demand of the development, 20-psi minimum residual pressure is required at 75% of peak demand. In no case will the residual pressure on the highest building site be less than 35 psi during peak demand.
- ? Valves shall be located at the intersection with other water mains. Minimum requirements will be two valves for a tee intersection and three for a cross intersection. Valve spacing shall not exceed 1,000 feet in any case.

3.1.2. High density residential: (5 units and over per acre)

- ? For areas of single-family homes, hydrants shall not be over 600 feet apart and have a calculated minimum flow of 750 gpm plus 75% peak demand of the development, 20 psi residual pressure is required at 75% of peak demand. In no case will the residual pressure on the highest building site be less than 35 psi during peak demand.
- ? For areas consisting of apartments, dormitories, condominiums etc., hydrants shall not be over 500 feet apart and have a calculated minimum flow of 1,000 gpm plus 75% peak demand of the development, 25 psi residual pressure is required at 75% of peak demand. In no case will the residual pressure on the highest building site be less than 35 psi during peak demand.
- ? Valves shall be located at the intersection with other water mains. Minimum requirements will be two valves for a tee intersection and three for a cross intersection. Valve spacing shall not exceed 1,000 feet in any case.

3.1.3. Commercial areas:

- ? For small, isolated commercial districts, the water system shall be designed the same as apartments and dormitories.
- ? For large shopping centers and high-density downtown areas, the maximum hydrant spacing shall be 500 feet and have a minimum flow of 1,000 gpm with 35-psi residual pressure. In no case will the residual pressure on the highest building site be less than 35 psi during peak demand.
- ? Valves shall be located at the intersection with other water mains. Minimum requirements will be two valves for a tee intersection and three for a cross intersection. Valve spacing shall not exceed 1,000 feet in any case.

#### 3.1.4. Industrial areas:

- ? For isolated industrial sites, the maximum hydrant spacing shall be 500 feet and have a minimum flow of 1,500 gpm with 40-psi residual pressure.
- ? For concentrated industrial sites, the primary water system shall be designed the same as above. Additional industrial fire requirements shall be the responsibility of the industry.

#### 3.1.5. Minimum Design Criteria:

- (1) Average demand – 125 gallons per capita per day.
- (2) Ratio of maximum day to average day = 2.38.
- (3) Ratio of maximum hourly demand to average demand = 4.2.
- (4) Reserve fire storage in accordance with National Board of Fire Underwriters.
- (5) Minimum storage for “balancing” or make up water = 25% of maximum day for first construction, accepted practice thereafter.
- (6) Coincident demand = 1.79 times average daily demand.
- (7) Design residual pressure is the expected residual pressure at the connection point taking the new connection demand into account.
- (8) Coincident demand plus fire flow or peak demand, whichever is greater, shall be used to size subdivision piping.
- (9) In no case will water main piping be less than six-inch diameter except smaller diameter may be used, when properly sized, for court and cul-de-sac streets that do not require a fire hydrant or extensions to adjacent properties.
- (10) Asbestos – Cement pipe is not approved for water distribution system design.
- (11) The “Equivalent Initial Flow” method may be used for determining the design residual pressure to be used at the delivery point for water to a new subdivision or service. W P Utilities, Inc. Engineer will furnish this data at a charge of \$450.00 per test. One-week advance notice is required to provide this data.



- ? Derivation and description of this method is available from the City Engineer.
  - ? Any other “accepted practice” method may be used; however, W P Utilities, Inc. Engineer’s will check minimum pipe sizing office using this method and subdivision piping must meet minimum requirements indicated by this method.
- (12) Interim Design Standards for proposed connections to existing water distribution systems newly acquired by WP UTILITIES, INC.:
- ? Proposed connections to any newly acquired existing system must meet standards established by South Carolina Department of Health and Environmental Control and State Primary Drinking Water Regulations, with regard to fire flows, until such time as the existing system can be brought into conformance with W P Utilities, Inc. Standards.
  - ? Fire flow, as described in DHEC Regulations, shall be provided.
  - ? With the exception of the hydraulic analysis for fire flows, all other requirements of W P Utilities, Inc. Regulations and Specifications shall apply.
  - ? Once any newly acquired existing system has been brought into compliance with W P Utilities, Inc. standards, proposed connections must comply with normal design standards.
- (13) Cover – All distribution mains shall be provided with sufficient earth or other suitable cover. Minimum cover depth will be as follows:
- ? Minor subdivision piping, 8 inch diameter and less, 30 inch minimum cover.
  - ? Twelve-inch diameter, 36-inch minimum cover.
  - ? Sixteen-inch diameter and larger, 48 inch minimum cover.
  - ? All piping to be located outside of a dedicated easement (i.e. in S.C. Department of Transportation right-of-way) shall have a 48-inch minimum cover.
  - ? W P Utilities, Inc. Engineer shall approve special conditions, other than those, listed in writing.

- (14) Easement Requirements – Water mains shall be installed in private easements, which must be dedicated to the exclusive use of WP UTILITIES, INC. These easements must be granted prior to the date the final plat for the property being developed is recorded and must be shown on the final plat.

? Additionally, easements must be reserved at approximately 600 feet intervals along the boundary of the property under development to allow future connections to the water system being proposed by the developer. W P Utilities, Inc. Engineer will determine the exact location of these additional easements, when the proposed water plans are submitted for review and approval prior to construction.

? Refer to Detail for Easement Acquisition at the end of Article 2 to determine width of required easements.

3.1.6. Materials – Pipe selected shall have been manufactured in conformity with W P Utilities, Inc., specifications for water main construction.

3.1.7. System Design shall include:

? Dead-ends shall be minimized by looping of all mains.

? Where dead-end mains occur they should be provided with a fire hydrant for flushing purposes.

? No flushing device shall be directly connected to any sewer system.

? No pools of any kind shall be directly connected to any sewer system.

? No irrigation drainage, Commercial or Private shall be directly connected to any sewer system.

? All irrigation systems, pools, Laundromats, health care facilities and any other facility W P Utilities, Inc. deems necessary, whether Commercial or Private shall not be connected to any water supply system without an approved RPV device.

3.1.8. Separation of Water Mains and Sewers:

(1) General – The following factors should be considered in providing adequate separation:

? Materials and type of joints for water and sewer pipes.

? Soil conditions.

? Service and branch connections into the water main and sewer line.

- ? Compensating variations in the horizontal and vertical separations.
  - ? Space for repair and alterations of water and sewer pipes.
  - ? Offsetting of pipes around manholes.
- (2) Parallel installation:
- ? Normal conditions – Water mains shall be laid at least 10 feet horizontally from any sanitary sewer, storm sewer or sewer manhole, whenever possible; the distance shall be measured edge-to-edge.
  - ? Unusual conditions – When local conditions prevent a horizontal separation of 10 feet, a water main may be laid closer to a storm or sanitary sewer provided that:
    - (a) The bottom of the water main is at least 18 inches above the top of the sewer.
    - (b) Where this vertical separation cannot be obtained, the sewer shall be constructed of materials and with joints that are equivalent to water main standards of construction and shall be pressure tested to assure water-tightness prior to backfilling.
  - ? Water mains shall not be laid less than 25' horizontally from any portion of a wastewater tile field or spray field or it will otherwise be protected by an acceptable method approved by SCDHEC.

#### 3.1.9. Crossings:

- (1) Normal conditions – Water mains crossing house sewers, storm sewers or sanitary sewer shall be laid to provide a separation of at least 18 inches between the bottom of the water main and the top of the sewer, whenever possible.
- (2) Unusual conditions – When local conditions prevent a vertical separation as described in Article 4, Section 4.1.17(3) the following construction shall be used:
  - ? Sewers passing over or under water mains should be constructed of the materials described in Article 4, Section 4.1.17(3).
  - ? Water mains passing under sewer shall, in addition, be protected by providing:

- (a) A vertical separation of at least 18 inches between the bottom of the sewer and the top of the water main.
- (b) Adequate structural support for the sewers to prevent excessive deflection of joints and settling on and breaking the water mains.
- (c) That the length of water pipe be centered at the point of crossing so that the joints will be equidistant and as far as possible from the sewer.
- (d) Sewer manholes – No water pipe shall pass through or come into contact with any part of a sewer or sewer manhole.

#### 3.1.10. Valve, Air Relief, Meter and Blow-Off Chambers:

- ? Sediment accumulations may be removed through a standard fire hydrant.
- ? Chambers or pits containing valves, blow-offs, meters or other such appurtenances to a distribution system, shall not be connected directly to any storm drain or sanitary sewer, nor shall blow-offs or air-relief valves be connected directly to any sanitary sewer.
- ? Such chambers or pits shall be drained to the surface of the ground where they are not subject to flooding by surface water, or to absorption pits underground.

#### 3.1.11. Hydrants:

- ? Hydrant drains shall drain to the ground surface or to dry wells, provided exclusively for that purpose. (See construction specification details).
- ? Hydrant drains shall not be connected to or located within ten feet of sanitary sewers or storm drains.
- ? Standard silver paint shall be used for hydrant tops only when water mains and supply are adequate to provide fire flow. Fire hydrants, which required additional distribution system construction to provide fire flows, shall be painted with yellow tops.

#### 3.1.12. Surface Water Crossings – Surface water crossings, both over and under water, present special problems, which should be discussed with the reviewing authority before final plans are prepared.

- (1) Above-water crossings, the pipe shall be:
  - ? Adequately supported.

- ? Protected from damage and freezing.
  - ? Accessible for repair or replacement.
- (2) Under water crossings shall be:
- ? A minimum pipe cover of 2' will be provided for all underground stream crossings. If the crossing is greater than 15' in width a blow off must be provided on the side opposite the supply service.
  - ? The pipe shall be of special construction having flexible watertight joints.
  - ? Valves shall be provided at both ends of water crossings so that the section can be isolated for test or repair; the valves shall be easily accessible and not subject to flooding.
  - ? Sampling taps shall be available at each end of the crossing.
  - ? Permanent taps shall be made for testing and locating leaks.

#### 3.1.13. Cross Connections:

- ? There shall be no physical connection between the distribution system and any pipes, pumps, hydrants or tanks whereby unsafe water or other contaminating materials may be discharged or drawn into the system.
- ? The approval of the reviewing authority shall be obtained for interconnections between potable water supplies.
- ? Neither, steam condensate nor cooling water from engine jackets or other heat exchange devices shall be returned to the potable water supply.

#### 3.1.14. Water Services and Plumbing – Water services and plumbing shall conform to relevant plumbing codes.

#### 3.1.15. Water Pressure in System – The system shall be designed to maintain a minimum pressure of 20 pounds per square inch at all points in the distribution system under all conditions of flow.

#### 3.1.16. Disinfection of Water Mains – (See Article 7, Section 4.0 Testing and Sterilizing). The specifications shall include detailed procedures for the adequate flushing, disinfection, and bacteriological testing of all water mains.

#### 3.1.17. Metering – Each service connection shall be metered in accordance with WP UTILITIES, INC. guidelines.

### 3.1.18. Pumping Facilities Planning Standards:

- (1) General – Pumping facilities shall be designed to maintain the sanitary quality of pumped water. Subsurface pits or pump rooms and inaccessible installations should be avoided. No pumping stations shall be subject to flooding.
- (2) Location – The pumping station shall be so located that the proposed site will meet the requirements of the sanitary protection of the water quality, hydraulics of the system and be protected against interruption of service by fire, flood or any other hazard.
- (3) Site Protection – The station shall be:
  - ? Elevated to a minimum of two feet above the 100-year return frequency flood elevation, or protected to such elevation.
  - ? No station shall be located in the regulatory floodway as determined by Corps of Engineers maps, etc.
  - ? Accessible at all times.
  - ? Graded around stations so as to lead surface drainage way from the station.
  - ? Protected to prevent vandalism and entrance by unauthorized persons or animals.
- (4) Surface Water Facilities – Pump stations normally associated with the distribution system shall:
  - ? Have adequate space for the installation of additional units if needed, and for the safe servicing of all equipment.
  - ? Be of durable character, fire and weather resistant and with outward opening doors.
  - ? Have floor elevation of at least six inches above finished grade.
  - ? Have underground structure water-proofed.
  - ? Have all floors drained without impairing the quality of water being handled and if equipment is contained on the floor, the floor shall slope at least three inches in every ten feet to the point of drainage.

- ? Provide suitable outlet for drainage from pump glands without discharging onto the floor.

(5) Suction Well – Suction wells shall:

- ? Be watertight.
- ? Have floors sloped to permit complete removal of water.
- ? Be covered or otherwise protected against contamination, including pump lubricants.

(6) Equipment Servicing – Pump station shall be provided with:

- ? Crane-ways, hoist beams, eyebolts, or other adequate facilities for servicing or removal of pumps, motors, or other heavy equipment.
- ? Openings in floor, roofs, fences or wherever else needed for removal of heavy or bulky equipment.

(7) Stairways and Ladders – Stairways and ladders shall:

- ? Be provided between all floors, in pits or compartments, which must be entered in accordance with OSHA rules and regulations.
- ? Have handrails on both sides, and treads of non-slip materials in accordance with OSHA rules and regulations.
- ? Stairs are preferred in areas where there is frequent traffic or where supplies are transported by hand. They shall have risers not exceeding nine inches and treads wide enough for safety.

(8) Heating – Provision shall be made for adequate heating for:

- ? The comfort of the operator.
- ? The safe and efficient operation of the equipment.
- ? In pump houses not occupied by personnel, only enough heat need be provided to prevent freezing of equipment or treatment process.

(9) Ventilation – Ventilation shall conform to the building code. Adequate ventilation shall be provided for all pumping stations. Forced ventilation of at least six changes of air per hour shall be provided for:

- ? All rooms, compartments, pits and other enclosures below grade floor.

- ? Any area where unsafe atmosphere may develop or where excessive heat may be built up.
- (10) Dehumidification – In areas where excess moisture could cause hazards to safety or damage to equipment, means for Dehumidification shall be provided.
- (11) Lighting – Pump stations shall be adequately lighted throughout. All electrical work shall conform to the requirements of the City-County Electrical Code.
- (12) Sanitary and Other Connections – Except in the cases of small automatic stations or where such facilities are otherwise available, all pumping stations shall be provided with potable water, lavatory and toilet facilities. Plumbing must be so installed as to prevent contamination of a public water supply. Wastes shall be discharged in accordance with the rules, regulations and requirements of WP UTILITIES, INC. or county having jurisdiction over the site.
- (13) Pumps – At least two pumping units shall be provided. If only two units are provided, each shall be capable of carrying the peak demand. If more than two units are installed, they shall have sufficient capacity so that any one pump can be taken out of service and the remaining pumps are capable of carrying the peak demand. The pumping units shall:
  - ? Have ample capacity to supply the peak demand without dangerous overloading.
  - ? Be driven by a prime mover able to operate against the maximum head and air temperature, which may be encountered.
  - ? Have spare parts and tools readily available.
- (14) Suction Lift – Suction lift shall:
  - ? Be avoided, if possible.
  - ? Be within allowable limits, preferably less than 15 feet.
  - ? If suction lift is necessary, provision shall be made for priming the pumps.
- (15) Priming – Prime water must not be of lesser sanitary quality than that of the water being pumped. Means shall be provided to prevent back siphonage in accordance with “Ten States Standards.” When an air-operated ejector is



used, the screened intake shall draw clean air from a point at least 10 feet above the ground or other source of contamination, unless apparatus approved by the reviewing authority filters the air. Vacuum priming may be used.

(16) Booster Pumps – Booster pumps shall be located or controlled so that:

- ? They will not produce negative pressure in their suction line.
- ? The intake pressure shall be at least 20 psi when pump is in normal operation.
- ? Automatic cutoff pressure shall be at least 20 psi in the suction line.
- ? Automatic or remote control devices shall have a range between the start and cutoff pressure, which will prevent excessive cycling.
- ? In addition to the other requirements of this section, inline booster pumps shall be accessible for servicing and repairs.

(17) Automatic and Remote Controlled Stations – All automatic stations should be provided with automatic signaling apparatus which will report when the station is out of service. All remote controlled stations shall be electrically operated and controlled and shall have signaling apparatus of proven performance. Installation of electrical equipment shall conform to the National Electrical Code and the City Electrical Code.

(18) Appurtenances:

- ? Pumps shall be adequately valved to permit satisfactory operation, maintenance and repair of the equipment. If foot valves are necessary they shall have a net valve area of at least two and one half times the area of the suction pipe and they shall be screened. Each pump shall have a positive acting check valve on the discharged side between the pump and shutoff valve.
- ? In general, piping shall be designed so that the friction head will be low and not be subject to contamination. The piping should be sloped in once direction to drain. Piping should have adequate clean outs, watertight joints, and be protected against surge or water hammer. It shall be that each such pump has an individual suction line or the lines shall be so manifold that they will insure similar hydraulic and operation conditions.
- ? Each pump shall have a standard pressure gauge on its discharge line. It should also have a compound gauge on its suction line. Each pump

shall have recording gauges in the larger stations and have a direct reading meter in gallons with accumulator.

- ? Water seals shall not be supplied with water of a lesser sanitary quality than that of the water being pumped. Where pumps are sealed with potable water and are pumping water of lesser sanitary quality, the seal shall (a) be provided with a break tank open to atmospheric pressure; and (b) have an air gap between feeder line and spill line of the tank, at least six inches or two pipe diameters, whichever is greater.
- ? Controls – Pumps, their prime movers and accessories, shall be controlled in such a manner that they will operate at rated capacity without dangerous overload. Electrical controls should be located above grade.
- ? When power failure would result in cessation of minimum essential service, power supply shall be provided from at least two independent sources or standby or auxiliary source shall be provided.
- ? Auxiliary Power Supply – When automatic pre-lubrication of pump bearings is necessary, and an auxiliary power supply is provided, the pre-lubrication line shall be provided with a valved by-pass around the automatic control.

## **Article 4.**

### **DESIGN OF SANITARY SEWERS**

#### **SECTION 4.0. GENERAL**

The WP UTILITIES, INC. will approve plans for new systems, extensions, or replacement sewers only when designed according to the “separate plan,” in which rain water from roofs, streets, and other areas, and ground water from foundation drains are excluded. Sanitary sewers 15 inches and smaller shall be VCP or PVC with an approved joint. Sanitary sewers 18 inches and larger may be concrete with approved joints and an approved liner. Sewers shall not be constructed under street paving except for crossings. Variations must be approved, in writing, by W P Utilities, Inc. Engineer.

- 4.0.1. Water mains should not be located in contaminated areas. If a water main must run through a contaminated site, the pipe material must protect the water system from contamination.
- 4.0.2. Sewer systems should be designed for the estimated ultimate tributary population, except in considering parts of the system that can be readily increased in capacity. Similarly, consideration should be given to the maximum anticipated capacity of institutions, industrial parts, etc.

#### **SECTION 4.1 SYSTEM DESIGN CRITERIA**

In determining the required capacities of sanitary sewers the following factors shall be considered:

##### **4.1.1. General information, including:**

- ? Maximum hourly sewage flow.
- ? Additional maximum sewage or waste flow from industrial plants.
- ? Ground water infiltration.
- ? Topography of area.
- ? Location of waste treatment plant.
- ? Depth of excavation.
- ? Pumping requirements.

? The proposed sanitary sewers, above the point where there are 375 acres in the drainage basin or the pipe size is 15", whichever is greater, must be adequately designed to handle the effluent at the ultimate land holding capability. Downstream from this point, design based on the projected population, figures will be acceptable, provided easements 25 feet wide are furnished, to provide for future installation of parallel lines. Additionally, where at least 30 percent of a drainage area is already developed, a population density at least equal to that of the existing development must be used for the entire drainage area.

4.1.2. Per Capita Flow – New sewer systems shall be designed on the basis of an average daily per capita flow of sewage of not less than 200 gallons per day. This figure is assumed to cover normal infiltration, but an additional allowance should be made where conditions are unfavorable. Generally, the sewers should be designed to carry, when running full, not less than the following daily per capita contributions of sewage, exclusive of sewage or other waste flow from industrial plants:

$$Q = (10 \times 10^4 P) \left( 1 + \frac{14}{4 + \sqrt{P}} \right)$$

Where "P" is the population in thousands.

4.1.3. Alternate Method – When deviations from the foregoing per capita rates are demonstrated, a description of the procedure used for sewer design shall be included. Such design will be approved at the discretion of WP UTILITIES, INC.

4.1.4. Minimum Size – No sewer shall be less than eight inches in diameter. Wyes for services lines shall have a minimum branch size of six inches.

4.1.5. Depth – In general, sewers shall be sufficiently deep so as to receive sewage from basements and to prevent freezing. Sanitary sewers shall have a minimum cover of three feet between manholes except that they may be encased or constructed of cast iron if this depth cannot be achieved.

4.1.6. Slope:

(1) All sewers shall be so designed and constructed to give mean velocities, when flowing full, of not less than 2.0 feet per second, based on Mannings' formula. The following are the minimum slopes which should be provided; however, slopes greater than these are desirable:

<u>Sewer Size</u>	<u>Minimum Slope in Feet per 100 Feet</u>
8"	0.40
10"	0.28
12"	0.22
14"	0.17
15"	0.15
16"	0.14
18"	0.12
21"	0.10
24"	0.08
27"	0.067
30"	0.058
36"	0.046

(2) Under special conditions, if detailed justifiable reasons are given, slopes slightly less than those required for the 2.0 feet per second velocity when flowing full may be permitted. Such decreased slopes will only be considered where the depth of flow will be 0.3 of the diameter or greater for design average flow. Whenever such decreased slopes are selected, the design engineer must furnish with his report his computations of the depths of flow in such pipes at minimum, average, and daily or hourly rates of flow. It must be recognized that decreased slopes may cause additional sewer maintenance expense. Sewers shall be laid with uniform slope between manholes.

- ? Sewers on 20 percent slope or greater shall be anchored securely with concrete anchors or equal, spaced as follows:
- ? Not over 36 feet center to center on grades 20 percent and up to 35 percent.
- ? Not over 24 feet center to center on grades 35 percent and up to 50 percent.
- ? Not over 16 feet center to center on grades 50 percent and over.

4.1.7 Alignments – Sewers 24 inches or less shall be laid with straight alignment between manholes.

4.1.8 Increasing Size – When a smaller sewer joins a larger one, the invert of the larger sewer shall be lowered sufficiently to maintain the same energy gradient. An approximate method for securing these results is to place the 0.8 depth point of both sewers at the same elevation.

- 4.1.9 High Velocity Protection – Where velocities greater than 15 feet per second are attained, special provision shall be made to protect against displacement by erosion and shock.
- 4.1.10 Materials – The material selected for construction shall be adapted to local conditions, such as character of industrial wastes, possibility of septicity, soil characteristics, exceptionally heavy external loadings, abrasion and similar problems. Cement asbestos pipe is not approved for sanitary sewer construction. Where the proposed material is not covered in WP UTILITIES, INC. specifications, installation specifications shall contain appropriate requirements based on the criteria, standards and requirements established by industry in its technical publications. Requirements shall be set forth in the specifications for the pipe and methods of bedding and backfilling thereof so as not to damage the pipe nor its joints, impede cleaning operations and future tapping, nor create excessive side fill pressures nor ovalation of the pipe, nor seriously impair flow capacity. All sewers shall be designed to prevent damage from superimposed loads. Proper allowance for loads on the sewer shall be made because of the width and depth of trench. When standard strength sewer pipe is not sufficient, the additional strength needed may be obtained by using extra strength pipe or by special construction.
- 4.1.11 Joints and Infiltration – In general, VC or PVC joints are required although other materials will be considered for approval. The method of making joints and materials used should be included in the specifications. Sewer joints shall be designed to minimize infiltration and to prevent the entrance of roots. Leakage tests shall be specified. This may include appropriate water or low pressure air testing. The leakage outward or inward (exfiltration or infiltration) shall not exceed 200 gallons per inch of pipe diameter per mile per day for any section of the system. The use of television camera or other visual methods for inspection prior to placing the sewer in service is recommended. Results of such tests shall be certified to W P Utilities, Inc.'s Engineer in writing by a registered engineer.
- 4.1.12 Sanitary sewers shall be constructed of cast iron at stream crossings.
- 4.1.13 Calculations – Computations should be presented, in a tabular form, to indicate depths and velocities at minimum, average and maximum daily water flow for the different sizes of sewers proposed.
- 4.1.14 Manholes:
- (1) Location of Manholes shall be installed at the end of each line; at all changes in grade, size, or alignment; at all intersections; and at distances not greater than 400 feet for sewers 15 inches or less, and 500 feet for sewers 18 inches to 30 inches, except that distances up to 600 feet may be approved in cases where adequate modern cleaning equipment for such spacing is provided.

Greater spacing may be permitted in larger sewers and in those carrying a settled effluent. Lamp holes may not be used.

- (2) Drop Type – a drop pipe should be provided for a sewer entering a manhole at an elevation of 24 inches or more above the manhole invert. Where the difference in elevation between the incoming sewer and the manhole invert is less than 24 inches, the invert should be filleted to prevent solid deposition.
  - (3) Diameter – The minimum diameter of manholes shall be 48 inches; larger diameters are preferable. For sewers in sizes eight inches up to 15 inches, manholes are to be a minimum of four feet in diameter. For sewers 18 inches and larger, manholes are to be a minimum of five feet in diameter.
  - (4) Manhole Depth – The four-foot diameter manhole shall have a minimum depth of four feet measured from the top of pipe to the top of the ring. Manholes of larger diameter shall be proportionately deeper. This provides for proper corbel construction.
  - (5) Flow Channel – The flow channel through manholes should be made to conform in shape and slope to that of the sewers.
  - (6) Water-tightness – Watertight manhole covers are to be used wherever the manhole tops may be flooded by street runoff or high water. Manholes of brick shall be waterproofed on the exterior with plaster coatings; supplemented by a bituminous waterproof coating where ground water conditions are unfavorable.
  - (7) Electrical equipment installed or used in manholes shall conform to paragraph 3.1.18.3.
- 4.1.15 Inverted Siphons – Inverted siphons should have not less than two barrels, with a minimum pipe size of six inches and shall be provided with necessary appurtenances for convenient flushing and maintenance; the manholes shall have adequate clearances for rodding; and in general, sufficient head shall be provided and pipe sizes selected to secure velocities of at least 3.0 feet per second for average flows. The inlet and outlet details shall be arranged so that either barrel may be taken out of service for cleaning.
- 4.1.16 Sewer Extensions – In general, sewer extensions shall be allowed only if the receiving sewage treatment plant is either:
- ? Capable of adequately processing the added hydraulic and organic load; or
  - ? Provision of adequate treatment facilities on a time schedule acceptable to the approving agency is assured.

#### 4.1.17 Protection of Water Supplies

- (1) Water Supply Interconnections – There shall be no physical connection between a public or private potable water supply system and a sewer, or appurtenance thereto which would permit the passage of any sewage or polluted water into the potable supply.
- (2) Relation to Water Works Structures – While no general statement can be made to cover all conditions, it is generally recognized that sewers shall meet the requirements of the approving agency with respect of minimum distances from public water supply wells or other water supply sources and structures.
- (3) Relations to Water Mains
  - ? Horizontal Separation – Whenever possible, sewers should be laid at least ten feet, horizontally, from any existing or proposed water main. Should local conditions prevent a lateral separation of ten feet, a sewer may be laid closer than ten feet to a water main if:
    - (a) It is laid in a separate trench;
    - (b) In either case the elevation of the crown of the sewer is at least 18 inches below the invert of the water main.
  - ? Vertical Separation – Whenever sewers must cross under water mains, the sewer shall be laid at such an elevation that the top of the sewer is at least 18 inches below the bottom of the water main. When the elevation of the sewer cannot be buried to meet the above requirements, the water main shall be relocated to provide this separation or reconstructed with slip-on or mechanical-joint cast-iron pipe or prestressed concrete cylinder pipe for a distance of ten feet on each side of the sewer. One full length of water main should be centered over the sewer so that both joints will be as far from the sewer as possible.
  - ? Special Conditions – When it is impossible to obtain proper horizontal and vertical separation as stipulated above, the water main shall be constructed of slip-on or mechanical-joint cast-iron pipe or prestressed concrete cylinder pipe and the sewer constructed of mechanical-joint cast-iron pipe, and both services should be pressure tested to assure water tightness.



#### 4.1.18. Sewage Pumping Stations

- (1) General – In general pumping stations will only be approved where gravity service is not possible. The following factors must be taken into consideration in location, design and construction of pumping stations:
- ? Flooding – Sewage pumping stations shall not be subject to flooding. Temporary facilities expected to be in service from five to ten years shall be protected from the 25-year frequency storm in accordance with the City-County of Manning's Drainage Ordinance. Permanent facilities which have a life expectancy of more than ten years shall be protected from the 100 year return frequency storm. A suitable superstructure, preferably located off the right-of-way of streets and alleys, should be provided. It is important that the station be readily accessible.
  - ? The size of the site provided for the pumping stations must be a minimum of 20 feet by 20 feet.
  - ? The pumping stations site must be fenced. Fencing must be a minimum of eight (8) feet high and shall conform to Article 19 of WP UTILITIES, INC. specifications. A double swing gate, a minimum of 20 feet wide, must be provided.
  - ? Alarm Systems – Alarm systems must be provided for all pumping stations. The alarm shall be activated in cases of power failure if emergency power is not in place, pump failure, or any cause of pump station malfunction. Where a municipal facility of 24-hour attendance is available, pumping station alarms shall be telemetered thereto. Where no such facility exists, an audio-visual device shall be installed at the station for external observation.
  - ? A sign stating "In case of emergency call 803.774.2010" shall be furnished and attached to the fencing. The sign must be 12 inches wide by 24 inches high, with 2 ½ inches letters.
  - ? An all-weather surface road, capable of supporting 36,000-pound vehicles, a minimum of 12 feet wide, must be provided for access to the pumping station site. A permanent easement, a minimum of 20 feet wide, must be furnished along the access road. Access roads to remotely located stations must have a turn around area 40 feet x 40 feet to accommodate mobile boom trucks.
  - ? Type – Large sewage pumping stations should be of the dry well type. Submersible stations are acceptable for smaller installations.

- (a) Dry Well Dewatering – A separate sump pump shall be provided in the dry wells to remove leakage or drainage with the discharge above the overflow level of the wet well. Water ejectors connected to a potable water supply will not be approved. All floors and walkway surfaces should have an adequate slope to a point of drainage.
- ? Structures – Wet and dry wells, including their superstructure, shall be completely separated.
  - (a) Separation – Wet and dry wells, including their super-structure, shall be completely separated.
  - (b) Pump Removal – Provision shall be made to facilitate removing pumps and motors.
  - (c) Access – Suitable and safe means of access shall be provided to dry wells of pump stations and shall be provided to wet wells containing either bar screens or mechanical equipment requiring inspection or maintenance. Stairways should be installed, with rest landings not to exceed ten-foot intervals.
  - (d) All locks for gate, control panel, wet well and valve pit shall be Master lock Type No. 0520, Size 3. If a housed pumping station is required, the door lock tumbler must match WP UTILITIES, INC. existing key system.
- ? Provisions must be made for emergency power supply, adequate to operate all equipment of the pumping station, for installations serving 50 or more homes.
- ? Instruction and Equipment – Sewage pumping facilities shall be supplied with five (5) complete sets of operational instructions, including emergency procedures, maintenance schedules, pump curves, parts lists, tools and such spare parts as may be necessary.
- ? Application and payment of fees for the power meter shall be the responsibility of the developer. Upon acceptance of the pumping station, ownership and billing will be transferred to WP UTILITIES, INC.

## (2) Design Criteria

### ? Wet Wells

- (a) Size – The effective capacity of the wet well shall provide a holding period not to exceed 10 minutes for the design average flow of the drainage basins.
- (b) Divided Wells – Where continuity of pumping stations operation is important, consideration should be given to dividing the wet well into separate sections, properly interconnected, to facilitate repairs and cleaning.

### ? Pumps

- (a) Pumps shall be adequately sized to handle the design peak flow of the proposed project.
- (b) Pumps should be selected that have an operating point at or near peak efficiency; a minimum efficiency of 50% will be required.
- (c) Duplicate Units – At least two pumps shall be installed.
- (d) If only two units are installed, they must have the same capacity, and a spare pump and motor of the same capacity must be furnished to WP UTILITIES, INC. Each shall be capable to handling flows in excess of the expected maximum flow. Where three or more units are installed, they should be designed to fit actual flow conditions and must be of such capacity that with any one unit out of service the remaining units will have capacity to handle maximum sewage flows.
- (e) Pumping Rates – The pumps and controls of main pumping stations, and especially pumping stations operated as part of treatment works, should be selected to operate at varying delivery rates to permit discharging sewage from the station to the treatment works at approximately its rate of delivery to the pump station.
- (f) Suction-Lift Pumping Stations – Suction-lift pumping stations installations shall meet all applicable requirements under Section 3.1.18.
- (g) Priming – Suction-lift pumps shall be of the self-priming type as demonstrated by a reliable record of satisfactory operation.

- (h) Capacity – Approval will be restricted to installations where the capacity does not exceed 200 gpm per pump and the total suction-lift does not exceed 15 feet.

? Force Mains

- (a) Force mains shall be adequately sized to handle the design peak flow of the drainage basin.
- (b) Velocity – At design average flow, a cleaning velocity of at least two feet per second shall be maintained.

- ? Overflows – The provision of a high level wet well overflow to supplement alarm systems and emergency power generation should be considered. Where a high level overflow is utilized, consideration shall also be given to the installation of storage-detention tanks, or basins, which shall be made to drain to the station wet well. Where such overflows affect public water supplies, shell-fish production, or waters used for culinary or food processing purposes, a storage detention basin, or tank, shall be provided having two hour detention capacity at the anticipated overflow rate.

(3) System Design

- ? General – Pumping stations must be equipped with all stainless steel hardware including, but not limited to, lifting chains, bolts, nuts, guide rails and anchor bolts.
- ? Access covers, and all associated hardware, for wet wells and valve pits must be lightweight aluminum. Access covers shall be hatch type, minimum 2' x 3'.

? Wet Wells

- (a) The wet well shall be positioned inside the fence so as to allow easy access with a vacuum or boom truck.
- (b) Floor Slope – The wet well floor shall have a minimum slope of one to one to the hopper bottom. The horizontal area of the hopper bottom shall be no greater than necessary for proper installation and function of the inlet.
- (c) Access – In smaller installations, where stairways are not required, an extension type or single section aluminum ladder

of sufficient length to enter the wet well shall be provided instead of ladder rungs.

- (d) Grit – Where it may be necessary to pump sewage prior to grit removal, the design of the wet well should receive special attention and the discharge piping shall be designed to prevent grit settling in pump discharge lines and pump not operating.
- ? Ventilation – Adequate ventilation shall be provided for all pump stations. Where the pump pit is below the ground surface, mechanical ventilation is required, so arranged as to independently ventilate the dry well and the wet well if screens or mechanical equipment requiring maintenance or inspection are located in the wet well. There shall be no interconnection between the wet well and dry well ventilation systems. In pits over 15 feet deep, multiple inlets and outlets are desirable. Dampers should not be used on exhaust or fresh air ducts and fine screens or other obstructions in air ducts should be avoided to prevent clogging. Switches for operation of ventilation equipment should be marked and located conveniently. All intermittently operated ventilating equipment shall be interconnected with the respective pit lighting systems. Consideration should be given also to automatic controls where intermittent operation is used. The fan wheel should be fabricated from non-sparking material. In climates where excessive moisture or low temperatures are a problem, consideration should be given to installation of automatic heating and dehumidification equipment.
- (a) Wet Wells – Ventilation may be either continuous or intermittent. Ventilation, if continuous, should provide at least 12 complete air changes per hour; if intermittent, at least 30 complete air changes per hour. Such ventilation shall be accomplished by introduction of fresh air into the wet well by mechanical means.
  - (b) Dry Wells – Ventilation may be either continuous or intermittent. Ventilation, if continuous, should provide at least six complete air changes per hour; if intermittent at least 30 complete air changes per hour.
- ? Flow Measurement – Suitable devices for measuring sewage flow may be required at pumping stations depending upon whether or not the station is to be in service permanently.
- ? Water Supply – There shall be no physical connection between any potable water supply and a sewage pumping stations, which under any conditions may cause contamination of the potable water supply. A potable water supply must be installed at the pumping station. Installation

of the water supply must comply with conditions stipulated under Section 45.2 of the “Ten State Standards.” The potable water supply lines shall be provided with freeze proof hose bibs. The developer must pay all fees.

? Pumps

- (a) Protection Against Clogging – Pumps handling raw sewage should be preceded by readily accessible bar racks with clear openings not exceeding two and one half inches, unless special devices are installed to protect the pumps from clogging or damage. Where the size of the installation warrants, a mechanically cleaned bar screen with grinder or comminutor device is recommended. Where screens are located below ground, convenient facilities must be provided for handling screenings. For the larger or deeper stations, duplicate protection units of property capacity are preferred.
- (b) Pump Openings – Pumps shall be capable of passing spheres of at least three inches in diameter. Pump suction and discharge openings shall be at least for (4) inches in diameter.
- (c) Priming – The pump shall be so placed that under normal operating conditions it will operate under a positive suction head, except as specified in Section 3.1.18 (2).
- (d) Intake – Each pump should have individual intake. Wet well design should be such as to avoid turbulence near the intake.
- (e) Anchor bolts for the pump discharge stand must be J-type stainless steel, cast in place in the wet well floor.
- (f) The discharge line from each pump must be provided with a ¼ inch tap for connection of pressure reading gauges. Each tap shall be installed complete with ¼ inch NPT x quick connect adapter with petcock type isolation valve.

- ? Valves – A suitable shutoff valve shall be placed on the discharge line of each pump. Shut off valves shall be flanged, all metal body, full flow valves (hand operated). Check valves shall be all metal body with full flow capability. Valves for discharge lines require review of valve data in advance.

- ? A square or rectangular valve pit must be provided to house the valves on the discharge line including a surge relief valve, if required. Overall dimensions of the valve pit must be ample for operation and maintenance of all valves in the pit.
  - (a) A minimum 2-inch drain line from the valve pit to the wet well will be required. A ball type check valve shall be installed on the end of the drain line inside the wet well to prevent sewer gases and raw sewerage from entering the valve pit.
- ? Controls – Level sensors shall be furnished and wired into the control circuit to permit the lag pump to stop before the lead pump, when flow decreases to a point where only one pump must operate. Liquid level sensors shall be the floating type, with encapsulated mercury switches.
  - (a) Pneumatic bubbler systems are not acceptable.
  - (b) The cable hanger shall be stainless steel of the hook type, located at the edge of hatch. Excess level sensor cable must be wrapped and secured to a hook on the cable hanger. Cable hanger base material must be 3 inch x ¼ inch stainless steel flat bar. Hook material must be 3/8-inch diameter stainless steel round stock. Hooks must be welded solid on both sides to the flat bar.
  - (c) Level sensor cables and power cables shall enter the wet well through a 4 inch diameter opening in the top slab of the wet well. This opening shall be located at the cable hanger side of the wet well for easy access to remove cables. No conduit shall be used for cables extending through the top slab.
- ? Electrical Equipment – Electrical systems and components (e.g., motors, lights, cables, conduits, switchboxes, control circuits, etc.) in enclosed or partially enclosed spaces where flammable mixtures occasionally may be present (including raw sewage wet wells) shall comply with the National Electrical Code requirements for Class I Division locations.
  - (a) All pumping stations must be designed to operate on three phase power so as to be compatible with W P Utilities, Inc. Emergency generating system.
  - (b) A 12 inch x 12 inch x 12 inch junction box (NEMA 4 enclosure) shall be located over the opening in the top slab provided for cables. A rubber gasket shall be installed between the top of the concrete and the underside of the junction box. Two conduits, a minimum of 2 inches in diameter, must be

provided from the junction box to the control panel. The junction box must have a gasketed cover on the topside.

- (c) Each component and wire shall be labeled and identified within the control panel as indicated on electrical drawings furnished by the pump manufacturer. Specifications and detailed drawings for pumps, control panel and float switches must be submitted for review and approval prior to installation. Local availability of replacement parts shall be considered in selection of proposed components.
- (d) A support frame, composed of 4-inch square stainless steel tubing, must be provided for the control panel and electrical breakers. Cross bracing for the frame must be 2 inch x 2 inch x ¼ inch stainless steel angel iron. The frame must be mounted on separate concrete piers with anchors bolts cast in the concrete. Three inch x 3/8 inch stainless steel flat bars must be used for mounting breakers, transformers, control panel, etc. A 4' x 4' concrete pad must be provided on the control panel access side of the support frame.
- (e) A receptacle must be provided for emergency power. This receptacle must be a Hubble brand #460R7W with #BB60-1W box, so as to be compatible with WP UTILITIES, INC. emergency generating system. A 110-volt, convenience weatherproof outlet must be provided at the control panel.
- (f) A photoelectric cell light shall be furnished and positioned on the service pole facing the wet well and valve pit.

#### ? Force Mains

- (a) Air Release Valve – An automatic air release valve for sewage application shall be placed at high points in the force main to prevent air locking. Air release valves shall have back flushing capability similar to Apco Model 400. Approval of other air release valves will be contingent upon review of data submitted.
- (b) Termination – The force main should enter the gravity sewer system at a point not more than two feet above the flow line of the receiving manhole.



## ? Emergency Operation

- (a) Objective – The objective of emergency operation is to prevent the discharge of raw or partially treated sewage to any waters and to protect the public health by preventing backup of sewage and subsequent discharge to basements, streets and other public and private property.
- (b) Emergency Power Supply – Provision of an emergency power supply for pumping stations serving 50 or more homes should be made, and may be accomplished by connection of the station to at least two independent public utility sources, or by provision of portable or in-place internal combustion engine equipment which will generate electrical or mechanical energy, or by the provision of portable pumping equipment.
- (c) In-Place Equipment – Where, in place, internal combustion equipment is utilized, the following guidelines are suggested for use:
  - ? The unit shall be bolted in place. Facilities shall be provided for unit removal for purposes of major repair or routine maintenance.
  - ? Controls – Provision shall be made for automatic and manual start-up and cut-in.
  - ? Size – Unit size shall be adequate to provide power for lighting and ventilation systems and such further systems affecting capability and safety.
  - ? Engine Location – The unit internal combustion engine shall be located above grade with suitable and adequate ventilation of exhaust gases.
- (d) Portable Equipment – Where portable equipment is utilized, the following guidelines are suggested for use:
- (e) Pumping units shall have capability to operate between the wet well and the discharge side of the station, with the station provided with permanent fixtures, which will facilitate rapid and easy connection of lines. Electrical energy generating units shall be protected against burnout when normal utility services are restored, and shall have sufficient capacity to provide power for lighting and

ventilation systems and such further station systems affecting capability and safety.

- (f) Emergency Power Generation – All emergency power generation equipment should be provided with instructions indicating the essentiality of routinely and regularly starting and running such units at full load.

? A pre-construction conference of Maintenance Division personnel with the Contractor will be held, at the discretion of the Superintendent of the Division.

4.1.19 Cover – All distribution mains shall be provided with sufficient earth or other suitable cover. Minimum cover depth will be as follows:

- ? Minor subdivision piping, 8 inch diameter and less, 30 inch minimum cover.
- ? Twelve-inch diameter, 36-inch minimum cover.
- ? Sixteen inch diameter and larger, 48 inch minimum cover.
- ? All piping to be located outside of a dedicated easement (i.e. in S.C. Department of Transportation right-of-way) shall have a 48-inch minimum cover.
- ? W P Utilities, Inc. Engineer shall approve special conditions other than those listed in writing.

## **Article 5.**

### **APPLICATION OF WP UTILITIES, INC.** **DRAINAGE AND STORM SEWER DESIGN**

#### **SECTION 5.0        GENERAL**

All drainage computations and storm sewer improvements shall be in accordance with WP UTILITIES, INC. drainage policy and the Flood Plain Insurance Program. Flooding from major streams as well as local flash flooding will be considered in design.

- 5.0.1 The Engineering Report and plans shall conform to specifications of Article 2.
- 5.0.2 On small projects, such as a single building, or buildings on one lot, computations need not be submitted with plans. The engineer or architect must state over his signature that the proposed plan meets the WP UTILITIES, INC. requirements and/or the Flood Damage Prevention Ordinance requirements. For certain projects as defined in state law a duly registered landscape architect may sign the certification.
- 5.0.3 On small projects, engineer's certification may be waived when the project is located in an existing subdivision and when the owner will sign a "save harmless" statement. (See Form 5A)
- 5.0.4 WP UTILITIES, INC. prohibits any individual, residential or commercial owner, to have storm drainage to be tied into its sanitary sewer system.

#### **SECTION 5.1        DESIGN PROCEDURES**

In determining the required capacities of storm sewers, the following factors are to be considered:

- 5.1.1 Imperviousness of the soil, selection of runoff coefficient.
- 5.1.2 Time of concentration from the upper reaches of the drainage area to the several design points.
- 5.1.3 Area of the drainage area.
- 5.1.4 Flow to be expected from the 10, 25, 50 and 100 year return frequency storms.
- 5.1.5 Water surface elevation of storm water thus calculated.

## SECTION 5.2      DESIGN BASIS

### 5.2.1 Flow

- ? Major and minor streams, as defined in WP UTILITIES, INC. Regulations, shall be designed to carry the 25 year storm within the improved section of the channel, the 50 year storm within the dedicated drainage easement and the 100 year storm must be contained one foot below the low point of the structure.
- ? Flow in channels shall be determined by Manning's equation or Kutter's formula.
- ? The "Rational Method" may determine runoff. Other "accepted practice" methods will be approved provided such method produces similar results with regard to runoff.
- ? Time of concentration shall be determined using the longest path "L" from the upper reaches of the drainage area of the design point. Care should be exercised when determining the average slope over the distance "L."
- ? Runoff coefficients used shall be in accordance with UP UTILITIES, INC. Regulations.
- ? Nomographs for solution of t and I, such as those published in Seelye's DATA BOOK FOR CIVIL ENGINEERS, are acceptable.

### 5.2.1 Drainage Structures

- ? Structures of metal or concrete are acceptable provided trench loads and superimposed loads are considered and the proper "n" value applied in accordance with good practice.
- ? Grades will be such as to produce minimum velocities of 2 f.p.s. Velocities up to 20 f.p.s. are acceptable provided adequate blocking is provided and that this velocity is reduced so as to prevent erosion at the outlet end of the structure.
- ? Depth of Cover – Structures shall have adequate cover to prevent damage from traffic and from other structures. The Depth at inlets shall be such that the distance from the water surface above the inlet to the water surface in the pipe will be equal to or exceed the velocity head ( $V^2/2g$ ) of water in the pipe.

- ? The street paving and curb and gutter may be utilized to carry a part of the 25-year return frequency rain. Flow allowed in the curb and gutter is the difference between the 10 and 25-year return frequency storms.

## **Article 6.**

### **PROCEDURES FOR THE SUBDIVISION OF LAND**

#### **SECTION 6.0            GENERAL**

The procedure for review and approval of a subdivision plat consists of three separate steps. These are:

- ? Sketch plan review by WP UTILITIES, INC. or its staff.
- ? Review and approval of Preliminary Plat, and
- ? Review and approval of final Plat.

#### **SECTION 6.1            SKETCH PLAN REVIEW**

The sub-divider or his representative shall present seven (7) copies of a sketch plan to the staff of WP UTILITIES, INC. Telephone number (803) 774.2010. The sketch plan shall be prepared in accordance with procedures set forth in WP UTILITIES, INC. Subdivision Regulations.

#### **SECTION 6.2            PRELIMINARY PLAT (CONSTRUCTION DRAWINGS)**

The subdivider or his representative shall submit seven (7) copies of a Preliminary Plat (Construction drawings) to the staff of WP UTILITIES, INC. The construction drawings shall be prepared in accordance with procedures set forth in Article 2, WP UTILITIES, INC. Regulations.

**6.2.1 Preliminary Engineering Report** - If a water system is proposed for the development, a preliminary engineering report should be submitted to the South Carolina Department of Health and Environmental Control, 2600 Bull Street, Columbia, S.C. 29201. The report should be submitted at least four (4) weeks prior to submission of construction drawings. When the preliminary engineering report is approved, submit three (3) copies of the water construction drawings with three (3) copies of an application for a permit to construct directly to the South Carolina Department of Health and Environmental Control. It should be noted that construction plans for sanitary sewers meeting the criteria for processing under SC DHEC's Delegated Review Program will not be submitted directly to SCDHEC. The procedures described in the letter attached hereto as Exhibit 6A will be followed instead.

- ? A copy of the preliminary engineering report(s) shall be submitted to WP UTILITIES, INC. The report(s) shall be prepared in accordance with procedures set forth in Article 2, WP UTILITIES, INC. Regulations.

- 6.2.2 Annexation – If the property being subdivided is contiguous to the city limits, see Article 8, Section 8.0.2. for procedures.
- 6.2.3 Easements – Attention is directed to the requirement for granting easements to WP UTILITIES, INC. to provide for the operation, maintenance, and future extension of water, sanitary sewer, and storm systems within the subdivision, as applicable. It is important to note that two copies of all off-site easements necessary for construction of the facilities to be deeded to the WP UTILITIES, INC. must be submitted with the preliminary plat (construction drawings).
- 6.2.4 Water Main Extension - The WP UTILITIES, INC. will extend water service into those areas not presently served by its water system in accordance with procedures set forth in Article 7, WP UTILITIES, INC. Regulations.
- 6.2.5 Sanitary Sewer Extension – WP UTILITIES, INC. will extend sanitary sewer service into those areas not presently served by its sewer system in accordance with procedures set forth in Article 8, WP UTILITIES, INC. Regulations.
- 6.2.6 Use of Septic Grey Water Tanks - If the use of the Grey Water System is anticipated, the sub-divider must make application to W P Utilities, Inc. and request a permit application. All installations will meet and or exceed the Federal State and W P Utilities, Inc.'s regulation. All maintenance, repairs and inspections will be performed by W P Utilities, Inc Regulations, with all cost associated to said same, will be at the property owners expense.
- ? Submit a copy of the I & E report obtained above along with the Preliminary Plat (construction drawings) to the South Carolina Department of Health & Environmental Control, 2600 Bull Street, Columbia, SC 29201 and to W P Utilities Inc., PO Box 2099, Sumter, SC 29151.
- 6.2.7 Construction - Following approval of the Preliminary Plat (construction drawings) the sub-divider may begin construction provided:
- ? All necessary permits to construct have been received from the South Carolina Department of Health and Environmental Control. Refer to section 6.2.1 above.
- ? All necessary highway encroachment permits have been received from the South Carolina Department of Transportation, City or County. To make application for an encroachment permit, contact W P Utilities, Inc., P. O. Box 2099, Sumter, SC 29151. Telephone number: (803) 774.2010.
- ? The Contractor must provide the WP UTILITIES, INC. twenty-four (24) hours prior notice in order that W P Utilities, Inc. Inspector can be scheduled to inspect the construction. Notice may be given by contacting the

Engineering Plans Review Section in the W P Utilities Engineer's office.  
Telephone number (803) 494-4370.

## SECTION 6.3            FINAL PLAT APPROVAL

Following completion of the physical development of all or an approved phase or part of the areas shown on the approved Preliminary Plat (construction drawings), the sub-divider or his representative shall submit five (5) prints of the Final Plat to the Planning Commission at the address shown in Section 6.1 above. The Final Plat shall be prepared in accordance with procedures set forth in Part, WP UTILITIES, INC. Regulations.

- 6.3.1 Mylar's - Attention is directed to the requirement that at least one set of the Final Plat (Record Drawings) shall be in Mylar form. Record drawings shall be prepared in accordance with procedures set forth in Article 2, WP UTILITIES, INC.
- 6.3.2 The sub-divider or his designated representative shall submit "Request for Approval & Acceptance of Installation." See sample Exhibit 6B.
- 6.3.3 Exhibit 5C – The sub-divider or his designated representative shall submit Exhibit 6C "Lien Waiver Form" signed by the Utility Contractor who installed the improvements, to WP UTILITIES, INC. before said improvements will be accepted by WP UTILITIES, INC.
- 6.3.4 Materials List – The sub-divider or his designated representative shall furnish to the WP UTILITIES, INC. a detailed quantity list of all materials used on the project. The Utility Contractor who installed the improvements must sign this materials list.
- 6.3.5 Following receipt of acceptable record drawings and the laboratory report certifying the water system is free from harmful bacteria, WP UTILITIES, INC., or its representative, will conduct. A final inspection of the water and sanitary sewer systems.
- 6.3.6 Following successful completion of the final inspection, WP UTILITIES, INC. will prepare deeds and easements for those utilities to be accepted by the WP UTILITIES, INC. for operation and maintenance. When these deeds and easements have been properly executed and accepted by WP UTILITIES, INC., the letter of acceptance by the WP UTILITIES, INC. for operation and maintenance will be issued.



- 6.3.7 Permit to Operate - Before the WP UTILITIES, INC. can place the subdivision water and/or sanitary sewer system(s) in operation, a permit to operate must be granted by the South Carolina Department of Health and Environmental Control. Since SCDHEC no longer performs final inspections on a routine basis, the project developer through his engineer must assume this responsibility. The engineer's inspection must be coordinated with the WP UTILITIES, INC. final inspection.
- ? Submittals Required - In order to obtain the permit to operate the developer's engineer must submit to SCDHEC properly certified as-built plans, laboratory test results for water mains, infiltration certification for sanitary sewers, and a letter from WP UTILITIES, INC. accepting the utilities for operation and maintenance.

## **Article 7.**

### **WATER MAIN EXTENSION**

#### **SECTION 7.0      GENERAL**

Water service will be extended into those areas not presently served by WP UTILITIES, INC. water system in accordance with the following:

- 7.0.1 Inside WP UTILITIES, INC. Limits – WP UTILITIES, INC. will install within a reasonable time after request an adequate water main to the property requiring service.
- 7.0.2 Outside WP UTILITIES, INC. Limit's -- there are two alternatives for extending water mains to provide service. Under the first, and most common, the person requesting service may execute a water main extension agreement with WP UTILITIES, INC., thereby obtaining WP UTILITIES, INC. participation in the cost of the water main extension. Refer to Section 7.2 for procedures for executing a water main extension agreement. The second method is, for the person requesting service to retain an engineer to design and prepare construction plans for the water main extension. Following approval of construction plans by the WP UTILITIES, INC. Engineer; the person requiring service lets a contract for construction of the water main extension. The design, plans and construction must comply with WP UTILITIES, INC. design criteria and regulations. This method carries no WP UTILITIES participation in the cost of engineering or construction, and the water main, along with necessary easements, must be deeded to WP UTILITIES, INC. at no cost to the WP UTILITIES, INC. Refer to Articles 1 and 2 of these regulations for procedures for Submission of Plans and Design Criteria.
- 7.0.3 Outside WP UTILITIES, INC. Limits but Contiguous to WP UTILITIES, INC. Limit's - it is WP UTILITIES, INC. practice to provide service only after the property is annexed into WP UTILITIES, INC. service area. Following annexation Section 7.0.1 above will apply. See Article 8, Section 8.0.2 for Procedures for Annexation.

#### **SECTION 7.1      WATER MAIN EXTENSION AGREEMENT**

A water main extension agreement is a contract entered into between WP UTILITIES, INC. and the person or persons requesting water service wherein WP UTILITIES, INC. agrees to provide water service to property outside WP UTILITIES, INC. limits not presently served by its water system. See sample water main extension agreement, Exhibit 7A.

## SECTION 7.2            PROCEDURES

The procedures for water main extension agreements are as follows:

7.2.1 Execution of Water Main Extension Agreement - In those areas outside WP UTILITIES, INC. limits, but not contiguous to WP UTILITIES, INC. limits, the developer may obtain service by entering into a water main extension agreement with WP UTILITIES, INC.

? To initiate a water main extension agreement, contact WP UTILITIES, INC., 19 Broad Street, Post Office Box 2099, Sumter, South Carolina 29151. Telephone number: (803) 774.2010

7.2.2 Water Main Size. WP UTILITIES, INC. shall establish the size of the water main deemed adequate to serve the property requiring service.

7.2.3 Design of. Water Main Extension - The developer's engineer shall design and prepare construction plans for the water main extension.

7.2.4 Cost of the Water Main Extension - The developer's engineer shall prepare an estimate of the cost of extending the water main to the boundary of the property to be served. This estimate shall include the contract cost, including materials and labor, for installation of the water main, engineering fees not to exceed 10%, and the estimated cost for acquisition of off-site easements. This estimate and the construction plans shall be submitted to WP UTILITIES, INC. for review and approval. Upon approval of the plans and estimate by the WP UTILITIES, INC., the estimate shall become the estimated cost used in the agreement.

7.2.5 Extension of Water Main. Following execution of a water main extension agreement, the developer shall install the water main to the boundary of the property requiring service.

7.2.6 WP UTILITIES, INC. Participation in Cost. WP UTILITIES, INC. will pay the developer the cost of the water main extended to the boundary of the property to be served in accordance with the terms, conditions and limitations established in the agreement. The developer shall sustain any costs in excess of the amount to be paid-by WP UTILITIES, INC.

7.2.7 Construction of the Water Distribution System to serve the interior of the property is the responsibility of the person or persons requesting service.

? The interior water distribution system shall be installed in accordance with plans and specifications submitted to and approved by the WP UTILITIES, INC. Engineer. Article 2, WP UTILITIES, INC. Regulations contains guidelines for the submission of plans.

- 7.2.8 All water main construction, both interior and off-site, shall be under the supervision of WP UTILITIES, INC. Engineer.
- 7.2.8 The owner as may be approved and accepted by the WP UTILITIES, INC. shall deed the water main extension and such portions of the interior water distribution system to the WP UTILITIES, INC.
- 7.2.9 Construction of the interior water distribution system may be carried out concurrently with construction of the water main extension to the boundary of the property requiring service.
- 7.2.10 Establishment of Water Service - Water service to the property will be established following:
- ? Execution of the water main extension agreement.
  - ? Completion of the water main extension.
  - ? Approval, acceptance, and deeding of the water mains, both interior and off-site to WP UTILITIES, INC.
  - ? Payment of applicable meter installation fees. Refer to Article 9, WP UTILITIES, INC. Regulations.

### SECTION 7.3            APPLICATIONS FOR INDIVIDUAL SERVICES

Application for individual services, i.e. water meters, will be accepted upon satisfactory completion of construction and:

- ? Receipt of properly prepared and certified record drawing plans from the engineer.
- ? Receipt of Engineering Division Form 6B, executed by the developer, requesting acceptance of the water system. Refer to Article 6, paragraph 6.3.2.
- ? Receipt of Engineering Division Form 3, Waiver of Lien, and list of materials installed from the contractor installing the water system. Refer to Article 6, paragraph 6.3.3.
- ? Satisfactory completion of pressure and bacteriological testing of the water system.

- ? Approval of the sanitary sewer system for service by WP UTILITIES, INC. Engineer; or evidence of an approved wastewater disposal system if not served by WP UTILITIES, INC. sewer.
- ? Issuance of building and plumbing permits by the appropriate Building Official/Inspections Department.

#### SECTION 7.4      ACCEPTANCE OF APPLICATIONS

Applications accepted under provisions of Section 7.3 above will not exceed 25% of those proposed for the project, or phase of the project if phasing has been approved. The limitations to 25% of the meters will be automatically lifted upon receipt and acceptance of the deeds and easements executed by the developer.

## **Article 8.**

### **SANITARY SEWER EXTENSION**

#### **SECTION 8.0      GENERAL**

Service will be extended into those areas not presently served by the WP UTILITIES, INC. sanitary sewer system in accordance with the following:

- 8.0.1 WP UTILITIES, INC. will install, within a reasonable time after request, an adequate sanitary-sewer main to the property requiring service.
- 8.0.2 Contiguous to Property Boundaries - If the property requiring service is contiguous to the WP UTILITIES, INC.'S service area, it is WP UTILITIES, INC. practice, upon annexation, to provide sanitary sewer service within a reasonable time if the property can be served by gravity systems, and/or where the owners will provide any necessary pump stations and force mains required.
- 8.0.3 Outside WP UTILITIES, INC. Service Area - there are two alternatives for extending sanitary sewer mains to provide service. The first, and most common, is for the person requesting service to enter into a Sanitary Sewer Main Extension Agreement with WP UTILITIES, INC. This agreement provides for WP UTILITIES, INC. participation in the cost of engineering and construction. The person requesting service must retain an engineer to complete studies to determine feasibility, best method and cost of providing service and to prepare construction plans. Refer to Section 8.2 for procedures for execution of the Sanitary Sewer Main Extension Agreement. The second alternative is for the person requesting service to have his engineer design and prepare construction plans for the extension. Following approval of the construction plans by the WP UTILITIES, INC., the person requesting service lets a contract for construction. The design, plans and construction must comply with WP UTILITIES, INC. Design Criteria and Regulations. This method does not allow WP UTILITIES, INC. participation in the cost of engineering or construction. Refer to Articles 2 and 4 for procedures for Submission of Plans and Design Criteria.

#### **SECTION 8.1      SANITARY SEWER MAIN EXTENSION AGREEMENT**

A Sanitary Sewer-Main Extension Agreement is a contract entered into between WP UTILITIES, INC. and the person or persons requesting sanitary sewer service wherein the WP UTILITIES, INC. agrees to provide sanitary sewer service to property outside WP UTILITIES, INC. limits not presently served by the WP UTILITIES, INC. sanitary sewer system. See sample Sanitary Sewer Main Extension Agreement attached as Exhibit 8A.

## SECTION 8.2            PROCEDURES

The procedures for Sanitary Sewer Main Extension Agreements are as follows:

8.2.1 Execution of Sanitary Sewer Main Extension Agreement - In those areas outside the WP UTILITIES, INC. limits not presently served by the WP UTILITIES, INC. sanitary sewer system, a Sanitary Sewer Main Extension Agreement may be entered into between WP UTILITIES, INC. and the person or persons requesting sanitary sewer service.

- ? To initiate a Sanitary Sewer Main Extension Agreement, contact the WP UTILITIES, INC., 19 Broad Street, Post Office Box 2099, Sumter, South Carolina, 29151. Telephone number (803) 774.2010. Refer to Exhibit 8A herein for sample Sanitary Sewer Main Extension Agreement.

8.2.2 Extension of sanitary sewer main - Following execution of a Sanitary Sewer Main Extension Agreement (refer to 8.2.1 above), an adequate sanitary sewer main will be extended to the boundary of the property requiring service in accordance with the following:

- ? Engineering design -- Construction plans for the proposed sanitary sewer extension shall be prepared by a registered professional engineer licensed to practice in South Carolina, and shall be submitted in accordance with procedures set-forth in Article 2, WP UTILITIES, INC. Regulations.
- ? Total Cost for Sanitary Sewer Extension -- The registered professional engineer preparing the construction plans shall determine the total cost for extending the gravity portion of the sanitary sewer main to the boundary of the property requiring service. This cost shall be determined as the sum of the engineering fees, easement acquisition costs and the construction cost including materials and labor for installation of the gravity sewer main. Sewage pump stations and force mains are excluded.
- ? The estimated total cost shall be subject to approval by the WP UTILITIES, INC. and shown in Paragraph 6 of the Sanitary Sewer Main Extension Agreement. WP UTILITIES, INC. Engineer shall determine the final total cost with construction costs being based on unit bid prices previously approved and actual quantities installed and measured in the field.

8.2.3 Engineering fees - Engineering fees shall be established in accordance with the "Suggested Median Fees for Professional Engineering Services" as recommended by the National Society of Professional Engineers. The engineering fees thus established shall be subject to approval by the WP UTILITIES, INC.

- ? The registered professional engineer preparing the construction plans shall certify in writing the actual quantities installed and measured in the field and that the engineering fees, as established and approved herein, were received.
- 8.2.4 Construction Cost -- The construction cost shall be determined by letting a contract for the installation of the sanitary sewer main extension.
- 8.2.5 The letting of the construction contract, shall conform to the following conditions:
- (1) The project must be approved for advertisement by the WP UTILITIES, INC. Documents submitted for approval shall include, but not be limited to, approved construction plans, S.C.D.H.E.C. construction permit, any required City, County or State right-of-way encroachment permits, S. C. Water Resources permits, public utility permits, railroad permits, any required easements on private property and a copy of the proposed newspaper advertisement.
  - (2) Upon approval, the project must be advertised for construction for a minimum of two weeks in both "The State" newspaper and "The Item."
  - (3) Proof of advertisement must be provided to WP UTILITIES, INC. prior to the bid opening.
  - (4) Bids must be forwarded to the WP UTILITIES, INC. to be opened jointly by the WP UTILITIES, INC. and the person or persons requesting service, as specified in the advertisement for bids.
  - (5) The contract will be awarded to the lowest responsible bidder. WP UTILITIES, INC. shall determine whether the bidder is responsible, and approve the award of the contract. WP UTILITIES, INC. shall have the authority to waive technicalities and reject any or all bids and to approve such awards, as in its opinion, appears to be in the best interest of WP UTILITIES, INC.
  - (6) A minimum of three bids must be received prior to awarding the contract.
- 8.2.6 Payment of Total Cost for Sanitary Sewer Extension - Payment of the total cost for sanitary sewer extension shall be the responsibility of the person or persons requesting service.
- 8.2.7 Sewer Tap Certificates - In consideration of the payment described in subparagraph 8.2.6 above, WP UTILITIES, INC. shall issue sewer tap certificates to the person or persons making such payment: for the gravity portion of the sanitary sewer extension. Pump stations and force mains are excluded.



- ? The number of sewer tap certificates issued shall be determined by dividing the total cost for the gravity portion of the sanitary sewer extension by three hundred dollars (\$1,500.00), or other cost (excluding sewer plant expansion fees) for a single family residence as established in Regulations on the date of execution of the Sanitary Sewer Main Extension Agreement by WP UTILITIES, INC., and rounding to the next lower whole number.
  - ? The sewer tap certificates so issued shall be negotiable in accordance with the provisions contained in the Sanitary Sewer Main Extension Agreement. They shall not be valid or negotiable as payment of sewer plant expansion fees.
- 8.2.8 Construction of Sanitary Sewer Collector System Construction of the sanitary sewer collector system to serve the interior of the property is the responsibility of the person or persons requesting service.
- ? The sanitary sewer collector system shall be installed according to plans and specifications submitted to and approved by WP UTILITIES, INC. Refer to Article 2, WP UTILITIES, INC. Regulations.
  - ? The sanitary sewer collector system shall be installed under the supervision of WP UTILITIES, INC.
  - ? The owner or owners thereof as may be approved and accepted by WP UTILITIES, INC. shall deed such portions of the sanitary sewer collector system to the WP UTILITIES, INC. Required easements shall be included in the deed.
  - ? Construction of the sanitary sewer Collector system may be accomplished concurrently with construction of the sanitary sewer main being extended to the boundary of the property requiring sanitary sewer service.
- 8.2.9 Establishment of Sanitary Sewer Service - Sanitary sewer service to the property will be established following:
- ? Execution of Sanitary Sewer Main Extension Agreement.
  - ? Completion of the sanitary sewer main extension.
  - ? Approval, acceptance, and deeding of the sanitary sewer main extension and collector systems to WP UTILITIES, INC.

## SECTION 8.3

## APPLICATIONS FOR INDIVIDUAL SERVICES

Applications for individual services, i.e. sewer taps, will be accepted upon completion of construction and:

- ? Receipt of properly prepared and certified record drawing plans by the engineer.
  - ? Receipt of Form 6B, executed by the developer, requesting acceptance of the sewer system. Refer to Article 6, paragraph 6.3.2.
  - ? Receipt of Form 6C, Waiver of Lien, and list of materials installed from the contractor installing the sanitary sewer system. Refer to Article 6, paragraph 6.3.3.
  - ? Receipt of certification from the developer's engineer that infiltration/exfiltration is within limits specified in WP UTILITIES, INC. Regulations.
- 8.3.1 Receipt of certification from the developer's engineer of the actual quantities installed and measured in the field and that the engineering fees as established and approved herein were received.
- 8.3.2 The appropriate Building Official/Inspections Department has issued plumbing Permits for the structures for which application is being made.
- 8.3.3 All requirements have been met for installation of 25% of the water meters in the project, or phase of the project if phasing has been approved. (Refer to Article 7 of these regulations).

## **Article 9.**

### **APPLICATION FOR NEW WATER SERVICE**

#### **SECTION 9.0        GENERAL**

Application for new water service involves a contractual arrangement, which requires the signature of the property owner or his legally appointed representative. See attached power of attorney form (see Exhibit 9A). Application for new service must be made to WP UTILITIES, INC., 19 Broad Street, Post Office Box 2099, Sumter, South Carolina, 29151. The applicant must provide the street and number where water service is desired; whether the service is to be residential or commercial and whether the building(s) is served by septic tank, or other sanitary sewer system.

#### **SECTION 9.1        AVAILABILITY OF SERVICE**

WP UTILITIES, INC. will verify that service is available and adequate and that the location to be served is inside/outside the service area. If outside but contiguous to WP UTILITIES, INC. service area, applicant is informed that the property owner must petition to be annexed prior to being served.

- 9.1.1 That location of service will be within a private easement, city street, Highway Department right-of-way, or County road. This is done to determine what type permit if any is required.
- 9.1.2 That the customer is aware that he will be responsible for having a plumber install all piping, and in some cases, a backflow prevention device on the building side of the meter.
- 9.1.3 That the customer is aware that he will be responsible for having his plumber or building contractor construct the meter box for all meters 3" in diameter or larger. Construction shall be in accordance with plans and specifications contained in Standard Detail WC-1A, and shall be completed prior to meter installation.

#### **SECTION 9.2        LOCATION**

If the location for service connection is within a South Carolina Department of Transportation right-of-way, there will be a delay in setting the meter. The Department of Utilities and Engineering must prepare and forward to the South Carolina Department of Transportation an application for permission to work within the Highway Department right-of-way. Under normal conditions, the permit is received from the South Carolina Department of Transportation within two to four weeks. There are similar requirements when the rights-of-way are under the jurisdiction of Local County.

### SECTION 9.3            WATER METER INSTALLATION FEES

Fees for water connection shall be:

<u>Meter Size</u>	<u>In service Area</u>
3/4"	\$ 950.00
1"	1,110.00
1-1/2"	1,420.00
2"	2,140.00
Over 2"	*

\*Fees for all meters over 2" for multi and single unit residential or commercial buildings shall be based on actual installation cost.

9.3.1 For multi unit residential or commercial buildings contact WP Utilities, Inc. Engineering department for computation of appropriate charges for connection.

### SECTION 9.4            EMERGENCY PERMIT PROCEDURE (SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION)

If an applicant states that the tap connection is needed immediately and is an emergency, the Department of Utilities and Engineering will prepare, as quickly as possible, the application sketch and cover sheet required by the South Carolina Department of Transportation. WP UTILITIES, INC. will then allow the applicant to deliver, the sketch and cover sheet to the office of the Maintenance Engineer, South Carolina Department of Transportation. The Maintenance Engineer will prepare a permit granting the Department of Utilities and Engineering permission for WP UTILITIES, INC. forces to set the meter.

### SECTION 9.5            PROCEDURE FOR RESUMPTION OF WATER SERVICE

9.5.1 If the meter has not been removed, applicant may make request for service resumption to the WP UTILITIES, INC., 19 Broad Street, Post Office Box 2099, Sumter, South Carolina, 29151. Payment of all back service charges and a fee as specified in WP UTILITIES, INC. Regulations for turning on water is required prior to resumption of service.

9.5.2 If the meter has been removed, applicant may make request for service resumption to WP UTILITIES, INC., 19 Broad Street, Post Office Box 2099, Sumter, South Carolina, 29151. A determination will be made at that time to reinstate the service or treat the request as a new service. If the service is to be reinstated, payment of all back service charges and a fee as specified in WP UTILITIES, INC. Regulations for replacing the meter shall be made prior to resumption of service.

SECTION 9.6            FIRE PROTECTION SYSTEMS OUTSIDE WP UTILITIES, INC. LIMITS

When the application for service is for a private fire protection system located outside the WP UTILITIES, INC. limits, the pertinent portions of the requirements stated above shall apply. In addition, the applicant shall, at the time of application, certify the number of fire hydrants and sprinkler heads to be installed. This information will be entered on the work order, or otherwise be transmitted to WP UTILITIES, INC. Fees for fire protection system connections shall be based on the actual installation cost.

SECTION 9.7            LONG SERVICE LINES

9.7.1 In some instances water service is not available to the property, but service can be provided by a service line across adjoining property. WP UTILITIES, INC. does not recommend such service and cannot accept any responsibility for service beyond the meter. No long line service will be approved which is longer than 1,500 lineal feet. When the property owner so requests, this type service will be reviewed by WP UTILITIES, INC. and may be approved subject to the following conditions:

- ? The property to be served is single family residential only. This type service cannot be approved for commercial or other uses.
- ? The property owner shall accept in writing, all responsibility for the level of service beyond the meter.
- ? The property owner must acquire any easements required, size, install and maintain the service line from the meter to his residence.
- ? Only one residence can be connected to each meter.

9.7.2 The Property Owner Shall Sign an Acknowledgement as Shown on the sample attached as Exhibit 9B.

SECTION 9.8            CROSS CONVECTION CONTROL/BACKFLOW PREVENTION

9.9.1 Each consumer connection to WP UTILITIES, INC. water system is required to be protected by a backflow prevention device appropriate for the proposed use. Dual check valve devices 1" in diameter and smaller are installed by WP UTILITIES, INC. at the time of meter installation. Appropriate fees are assessed and collected at the time of application for service. All other devices must be purchased and installed by the person requesting service. Installation must be made by a plumber certified to install and test such devices.

- (1) Definition of Terms. The devices referred to herein are:
- ? The reduced pressure type is a reduced pressure backflow preventer, which is used in applications that have the potential to present a high degree of hazard to the public health. These devices must be installed in a water-free vault or above ground. They must be inspected and certified annually.
  - ? The double check valve assembly (D.C.V.A.) consists of two single check valves housed in separate bodies, mounted in tandem with a gate valve on each end. These units are used for lesser hazards that involve potential contamination, but no hazard to the public health. They must be inspected and certified annually.
  - ? The dual check valve device consists of two check valves housed in a single body. It is installed in line on the building side of the meter. It is used in relatively low hazard applications, such as private residences.

9.8.2 Backflow prevention devices usually appropriate for the various uses are shown below.

- (1) RESIDENTIAL DEVICES (Watts APR Device)  
Domestic use, dual check valve device in sizes 3/4", 1 1/2" and 2"  
Irrigation use, dual check valve device in sizes 3/4" and 1"  
Irrigation use, D.C.V.A. double-type device in sizes 1 1/2" and 2"
- (2) COMMERCIAL IRRIGATION  
All sizes to be D.C.V.A. double-type device
- (3) DESTISTS, DOCTORS, VETERINARIANS, CHIROPRACTORS, ETC.  
D.C.V.A. double-type device Dual checks valve type device may be used if there is no ray development at the specific facility.
- (4) FUNERAL HOMES AND MORGUES  
Reduced Pressure-type valve in all cases. Reduced pressure backflow preventer must be in a water-free vault or housed above ground.
- (5) HOSPITALS  
Reduced pressure backflow preventer D.C.V.A double-type may be used in some locations. This would have to be recommended by the Cross-Connection Inspector.
- (6) CAR WASHES  
Small self-service type - D.C.V.A double-type device. Large type with re-circulation pump must have the reduced pressure backflow preventer.

- (7) PUBLIC SWIMMING POOLS  
D.C.V.A. double-type valve - all size meters.
- (8) RESTAURANTS  
D.C.V.A. double-type valve - all size meters.
- (9) LAUNDROMATS  
D.C.V.A. double-type valve - all size meters.
- (10) DRY CLEANERS  
Reduced pressure backflow preventer other than pick-up stations. Pick-up stations may use dual-type devices.
- (11) PUBLIC SCHOOLS  
High schools in most cases need reduced pressure devices where chemistry laboratories are in place. Middle or intermediate schools should be inspected and addressed as needed. Elementary schools - dual check valves in 3/4" and 1" D.C.V.A. double-type valves - size 1 1/2" and above.
- (12) FIRE LINE SPRINKLER SYSTEMS  
D.C.V.A. double check valves some cases could require a reduced pressure device. Inspection should be made before system is installed on industrial accounts.
- (12) RADIATOR SHOPS  
Reduced pressure-type devices, all size meters.
- (14) INTERCONNECTIONS BETWEEN WATER SYSTEMS  
In the event there is a second source of water serving the property, it must be physically separate from the system served by WP Utilities, Inc., water, or the property owner must protect the safety of the WP Utilities, Inc. water system by the installation of a double check valve assembly backflow preventer on the building side of the water meter. A reduced pressure backflow preventer may be required in certain applications as determined by the Cross Connection Control Section.

SECTION 9.9      FEES FOR INSTALLATION OF BACKFLOW PREVENTION DEVICES

In addition to water meter installation fees, a fee for installation of a backflow prevention device will be charged each applicant for new service when such devices are installed by WP UTILITIES, INC.

	<u>IN SERVICE AREA</u>	<u>OUT OF SERVICE AREA</u>
3/4" Dual check valve	\$55.00	\$65.00
1" Dual check valve	\$75.00	\$85.00
Over 1"	At Cost	At Cost

#### SECTION 9.10      MAIN LINE WATER TAPS

The cost for the installation of main lines taps as established by WP UTILITIES, INC. shall include all materials, labor, equipment and road repair required for the installation of a tapping sleeve, valve and box. This cost also includes extending the water main to the edge of the road right-of-way when the existing water main is located within the same right-of-way or within an easement contiguous to the road right-of-way. In the event that the existing water main is within an easement not contiguous to the road right-of-way, the main will be extended to the edge of that easement. WP UTILITIES, INC. reserves the right to amend this practice upon review of construction plans.



## **Article 10.**

### **APPLICATION FOR SANITARY SEWER SERVICE**

#### **SECTION 10.0                      GENERAL**

Application for sanitary sewer service involves a contractual arrangement that requires the signature of the property owner or his legally appointed representative. See attached power of attorney form (Exhibit 10A). Application must be sent to WP UTILITIES, INC., 19 Broad Street, Post Office Box 2099, Sumter, South Carolina 29151. The applicant must provide the Street, House Number and Lot Number where service is desired.

#### **SECTION 10.1                      VERIFICATION OF INFORMATION**

The agency assigning street numbers is:

Clarendon County:    County Emergency System

\_\_\_\_\_  
\_\_\_\_\_

#### **SECTION 10.2                      VERIFICATION OF INFORMATION**

10.2.1 A department staff member verifies the following:

- (1) That service is available and the system has the capacity to accept the additional loading.
- (2) That location to be served is inside WP Utilities, Inc., service area. If outside but contiguous to WP Utilities, Inc., service area, then applicant is informed that the property owner must petition to be annexed prior to being served.
- (3) That location of service will be within a private easement, Department of Transportation right-of-way or County road. This is done to determine what type permit is required.
- (4) That the property is served by WP Utilities, Inc. water. If not served, and water service is not available, a special agreement is required prior to approval of sewer service. See Exhibit 10B, Sanitary Sewer Service Agreement. If water service is available applicant must also subscribe to this service.

- (5) That if the service is for a residence, is it served by a sewage pump station meeting the criteria stated in Section 10.8? If yes, the work order and any other necessary records shall be properly annotated to insure the surcharge is billed.

10.2.2 If the location for service connection is within a South Carolina Department of Transportation right-of-way, there will be a delay in making the tap. WP Utilities, Inc. must prepare and forward to the South Carolina Department of Transportation an application for permission to work within the Department of Transportation right-of-way. Under normal conditions, the permit is received from the South Carolina Department of Transportation within two to four weeks. There are similar requirements for rights-of-way under the jurisdiction of Clarendon County.

#### SECTION 10.3 EMERGENCY PERMIT PROCEDURE (SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION)

If an applicant states that the connection is needed immediately and is an emergency, the Department of Utilities and Engineering will prepare, as quickly as possible, the application and sketch required by the South Carolina Department of Transportation. WP UTILITIES, INC. will then allow the applicant to deliver the application and sketch to the office of the Maintenance Engineer, South Carolina Department of Transportation. The Maintenance Engineer will prepare a permit granting the Department of Utilities and Engineering permission for WP UTILITIES, INC. forces to make the sewer tap.

#### SECTION 10.4 SEWER TAPPING FEES

Tapping charges for sewer connections shall be:

	<u>In Service Area</u>	<u>Out of Service Area</u>	
	\$1,500.00	Depending on cost	For
each tap			

Tap required for a use as follows:

Single family residence	1 tap
Single family mobile home	1 tap

Multi-family unit – 1 tap per unit.

Separate laundry facilities on the same premises restricted to use both residents of the multi-family units only: One (1) tap for every two (2) washing machines using not more than 40 gallons per wash cycle each. Larger machines shall require one (1) tap each.

For Day School: 1 tap for each 20 students and staff (based on average daily attendance).

For Institutions (except nursing homes and hospitals) having sleeping facilities (i.e. penitentiary, reformatory, boarding school, fulltime care facility) – 1 tap for each 4 beds.

All others: The number of taps shall be computed by WP UTILITIES, INC. in accordance with the criteria of the State Board of Health on the basis of 1 tap for each 400 gallons or portion thereof, of estimate average input per day into the sewer system.

## SECTION 10.5

### SEWAGE TREATMENT PLANT EXPANSION FEES

In addition to the sewer tapping fees enumerated above, a sewer plant expansion fee shall be required to be paid prior to each sewer service connection to offset the cost of providing increased treatment plant capacity. Such costs shall include debt service on bonds to provide plant capacity increase. The expansion fee shall be computed by multiplying the number of taps required in accordance with Section 10.4 times \$500.00; except that for sewer service to a building or other structure for which a building permit has been issued by the appropriate city or county building official at the time of payment prior to July 1, 1996, the sewer plant expansion fee shall be computed by multiplying the number of taps required in accordance with Section 10.4 times \$250.00.

## SECTION 10.6

### AVAILABILITY OF SANITARY SEWER SERVICE

In order to be available to provide service, the sanitary sewer main must be located within the boundary of the property to be served, or within the right-of-way of a road or street adjoining the property. Sanitary sewer service lines that must cross-intervening private property to reach the sanitary sewer main shall not be approved. All sanitary sewer service lines are subject to the plumbing code of the County having jurisdiction as to material, size, depth of lay and length.

## SECTION 10.7

### SEWER SERVICE CHARGES

Monthly Water Use <u>(in gallons)</u>	Monthly Sewer Service Charge <u>In Service Area</u>
Base	\$ 52.00
Each 100 Gallon:	
Operation	1.00
Debt services	2.10
Total:	\$ 3.10

Consumers using water cooling towers for air conditioning systems during the service periods commencing in the months of April through October. The minimum charge shall be:

Size of MeterIn Service Area

¾"	\$9.51
1"	12.91
1 ½"	18.31
2"	27.12
3"	48.61
4"	79.98
6"	168.09
8"	238.56
10"	527.08

Maximum sewer charge on single-family residence during the service periods commencing in the months of April through October will be 1,400 cubic feet.

Sewer rates for apartment buildings and trailer parks shall be the base rate per dwelling unit plus the rate per 100 cubic feet as reflected by water consumption.

Sewer rates for hotels, motels, dormitories and rooming houses shall be three-quarter (3/4) the base rate per room plus the rate per 100 cubic feet as reflected by water consumption.

SECTION 10.7SEWAGE PUMPING STATION SURCHARGE

In addition to the Sanitary Sewer Service charges established in Section 10.6 above, WP UTILITIES, INC. establishes a surcharge of \$12.00 per month for residences served by small sewage pump stations. A small pump station is defined as one, which serves 50 or fewer residences. When the number of residences actually served by a pump station exceeds 50, the surcharge shall be removed from the billings for residences served by that particular station.

SECTION 10.8EXTENDED PAYMENT

The expansion fee established in Section 10.5 may be paid in equal monthly payments not to exceed forty-eight (48) months. Such monthly payments shall be added to and included in the monthly water and sewer bill for the property to be served and shall be collectible in the same manner as any other water or sewer charge. Any uncollected portion of the expansion fee subject to extended payment in accordance with this section shall be immediately due and payable upon sale or transfer of the real property served and no further water or sewer service shall be provided to such property until the sewer plant expansion fee shall be paid in full or the new owner shall have applied to assume the extended payment obligation. If an applicant elects to make extended payments as provided in this section the equal monthly installments shall be computed according to an amortization schedule with an interest rate of ten (10%) percent per annum.

## **Article 11.**

### **INSTRUCTIONS TO BIDDERS**

#### **SECTION 11.1      RECEIPT AND OPENING OF BIDS**

11.1.1 WP UTILITIES, INC. of Manning, S.C. (herein called the "Owner"), invite bids on the form attached hereto, all blanks of which must be appropriately filled in. Bids will be received by the Owner at 19 Broad Street, Post Office Box 2099, Sumter, South Carolina, 29151, until \_\_\_\_\_ o'clock A.M./P.M., \_\_\_\_\_, 20\_\_\_\_, and then at said office publicly. Opened and read aloud. The envelopes containing the bids must be sealed, and designated as Bid  
for\_\_\_\_\_.

11.1.2 The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any or all bids. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within sixty (60) days after actual date of the opening thereof.

11.1.3 At the time of the opening of bids, each Bidder will be presumed to have inspected the site and to have read and be thoroughly familiar with the Plans and Contract Documents (including all Addenda). The failure or omission of any Bidder to examine any form, instrument, or document shall in no way relieve any Bidder from any obligation in respect to his bid.

11.1.4 SALES TAX AND/OR USE TAX - Bidders shall include in amounts bid payment of State Sales Tax. and/or Use Tax on all taxable materials specified to be furnished by the Contractor and incorporated into the work under this contract.

#### **SECTION 11.2      PREPARATION OF BID**

11.2.1 Each bid must be submitted on the prescribed form and shall be accompanied by a properly completed Compliance Statement with regard to Executive Order 11246. All bids must be based on the predetermined wage scale set forth by the U. S. Department of Labor where such wage scales are applicable. All blank spaces for bid prices must be filled in, in ink or typewritten, and the foregoing Compliance Statement must be fully completed and executed when submitted. The Contractor shall not remove and submit the PROPOSAL pages separate from the volume of

contract documents, but shall submit his proposal bound with the completed volume of documents, including all pages correctly assembled.

11.2.2 Each bidder, whether a resident or nonresident of this State and whether a license has been issued to him or not, is required to show evidence of being licensed before his bid for this project is opened or considered by affixing the bidder's South Carolina Contractor's license number on the outside of the sealed bid envelope. If such information is not provided, the bid will not be opened or considered by the owner.

? All bidders must fully comply with SC Code Ann Section 40-11-5, et.seq. (CumSup. 1998).

11.2.3 Bids which are incomplete, unbalanced, conditional, or obscure, or which contain additions not called for, erasures, alterations, or irregularities of any kind, or which do not comply with the Instructions to Bidders may be rejected at the option of the Owner.

11.2.4 The correct total amount bid for the complete work is defined as the correct sum total of the amounts bid for the individual items in the Proposal. The correct amount bid for each unit price item is defined as the correct product of the quantity listed for the item times the unit bid price. In case of error in the extension of prices, the UNIT PRICE will govern. Erasures or other changes in the bids must be explained or noted over the signature of the bidder.

11.2.5 Bidders or their authorized agents are expected to examine the site, the maps, drawings, specifications, circulars, schedule and other instructions pertaining to the work, which will be open to their inspection. Failure to do so will be at the bidder's own risk, and he cannot secure relief on the plea of error in the bid.

11.2.6 If more than any one party, by or in the name of his or their clerk, partner, or other person, offers one bid all such bids may be rejected. This shall not prevent a bidder from submitting alternative bids when called for. A party who has quoted prices on materials to a bidder is not thereby disqualified from quoting prices to other bidders or from submitting a bid directly for the materials or work.

11.2.7 Each bid shall be accompanied by a bid bond using the form contained in the contract (BID BOND pages 1 and 2) and executed by a bonding company duly authorized and licensed to do business in the State of South Carolina, or by a certified check payable to the order of WP UTILITIES, INC., and drawn upon a national bank or a bank and trust company doing business in the State of South Carolina, in an amount equal to five (5) percent of the amount of the bid, as evidence of good faith by the bidder. The deposits of the three lowest bidders will be held until the successful bidder has entered into a contract and furnished bond, or all bids have been rejected. **FAILURE TO USE THE BID BOND FORM**

CONTAINED IN THE BID PROPOSAL FORMS (BID BOND, PAGES 1 & 2).  
WITHOUT MODIFICATION. WILL RESULT IN REJECTION OF THE BID.

SECTION 11.3      ADDENDA AND INTERPRETATIONS

11.3.1 If any person contemplating submitting a bid for the proposed contract is in doubt as to the true meaning of any part of the plans, specifications, or other proposed contract documents, he may submit to WP UTILITIES, INC. a written request for an interpretation thereof. The persons submitting the request will be responsible for its prompt delivery. Any interpretation of the proposed documents will be made only by addendum duly issued and a copy of such addendum will be mailed or delivered to each person receiving a set of such documents. WP UTILITIES, INC. will not be responsible for any other explanation or interpretations of the proposed documents.

11.3.2 The estimated quantities contained in the proposal are for the purpose of comparing bids. These quantities are not guaranteed and payment will be made on the basis of the work as actually executed at the unit price in the proposal as accepted.

SECTION 11.4      MARKING AND MAILING BIDS

Bids, with their guaranties, must be securely sealed in suitable envelopes, addressed and marked on the outside.

SECTION 11.5      TIME FOR RECEIVING BIDS

Bids received prior to the time of opening will be securely kept, unopened. The official whose duty it is to open them will decide when the specified time has arrived and no bid received thereafter will be considered. No responsibility will be attached to the owner for the premature opening of a bid not properly addressed and identified. Unless specifically authorized, telegraphic bids will not be considered.

SECTION 11.6      WITHDRAWAL OF BIDS

Bids may be withdrawn on written or telegraphic request received from bidders prior to the time fixed for opening. Negligence on the part of the bidder in preparing the bid confers no right for the withdrawal of the bid after it has been opened.

SECTION 11.7      BIDDERS PRESENT

At the time fixed for the opening of bids, their contents will be made public for the information of bidders and others properly interested, which may be present either in person or by representative.

SECTION 11.8      TELEGRAPHIC MODIFICATION

Any bidder may modify his bid by telegraphic communication at any time prior to the scheduled closing time for receipt of bids, provided such telegraphic communication is received by the Owner prior to the closing, and provided further the Owner is satisfied that a written confirmation of the telegraphic modification over the signature of the bidder was mailed prior to the closing time. The telegraphic communication should not reveal the bid price but should provide the addition and subtraction or other modification so that the Owner will not know the final prices or terms until the sealed bid is opened. If written confirmation is not received within two days from the closing time, consideration may not be given to the telegraphic modification, unless it is to the best interest of WP UTILITIES, INC.

#### SECTION 11.9      QUALIFICATIONS OF BIDDER

11.9.1 The owner may make such investigations as he deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the owner all such information and data for this purpose as the Owner may request.

11.9.2 The Owner reserves the right to reject any bid if the evidence, submitted by, or investigation of, such bidder fails to satisfy the Owner that such bidder is properly qualified to carry out the obligations of the contract and to complete the work contemplated therein.

#### SECTION 11.10      BUSINESS LICENSE

11.10.1 Every contractor \*\*\* doing business with or for WP Utilities, Inc. and all contractors doing business for the property owners which, involves maintaining, undertakes to construct or supervise the construction, alteration, or repair of any building, distribution system, collection system, grey water system or to provide any type of contractual services whatsoever which would involve WP Utilities, Inc. or its right of ways must apply to WP Utilities, Inc. for approval for such services.

11.10.3 The total license fees must be up to date before requesting approval from WP Utilities, Inc. The contractor must provide certified copies of Business License that has been issued by the City and / or County.



#### SECTION 11.11      BID SECURITY

Each bid must be accompanied by a certified check or by a bid bond using the form contained in the contract (BID BOND pages 1 and 2) for an amount equal to at least five (5) percent of the amount of the bid, to guarantee that the successful bidder will, within ten (10) days from the date of the notice of award of contract, enter into a contract with the Owner, and execute to said Owner a performance and payment bond, the said contract and bond to be in the form set forth in the contract, bond and specifications referred to in the Advertisement for Bids. If for any reason whatever, the Bidder withdraws from the competition after opening of the bids, or refuses to execute the required contract and performance and payment bond, if his bid is accepted, the Owner may retain the amount of the certified check, or proceed on the bid bond. Such checks or bid bonds will be returned to all except the three lowest bidders within one week after the opening of bids, and the remaining checks or bid bonds will be returned promptly after the Owner and the successful bidder have executed the contract. FAILURE TO USE THE BID BOND FORM CONTAINED IN THE BID PROPOSAL FORMS (BID BOND, PAGES 1 & 2), WITHOUT MODIFICATION, WILL RESULT IN REJECTION OF THE BID.

#### SECTION 11.12      LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT

The successful bidder, upon his failure or refusal to execute and deliver the contract and bonds required within ten (10) days after he has received notice of the acceptance of his bid, shall forfeit to the Owner, as liquidated damages, for such failure or refusal the security deposited with his bid.

#### SECTION 11.13      TIME OF COMPLETION AND LIQUIDATED DAMAGES

Bidder must agree to commence work on or before a date to be specified in a written "Notice to Proceed" from the Owner and to fully complete the project within the number of consecutive calendar days thereafter as indicated on the Bid Form. Bidder must agree to pay as liquidated damages the sum indicated in the Contract Documents for each consecutive day thereafter that the work remains incomplete, as hereinafter provided in General Specifications. Signing of the proposal form signifies such agreement.

#### SECTION 11.14      CONDITIONS OF WORK

11.14.1 Each bidder must inform him fully of the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of his obligation to furnish all material and labor necessary to carry out the provisions of his contract. Insofar as possible, the Contractor, in carrying out his work, must employ such methods or means as will not cause any interruption of or interference with the work of

any other Contractor or utility company. All information given on the drawings or in the contract documents relating to subsurface conditions, existing pipes, and other structures is from the best sources at present available to the Owners. All such information is furnished only for the information and convenience of the Contractor. It is agreed and understood that the Owners do not warrant or guarantee that the conditions, pipes, or other structures encountered during construction will be the same as those indicated on the drawings or in the contract documents.

- 11.14.2 The Owner will not furnish any labor, material or supplies unless specifically provided for in the contract.

#### SECTION 11.15      SPECIFICATIONS AND SCHEDULES

- 11.15.1 The specifications, special provisions, schedules and drawings, which form the basis of any bid, will be considered as part thereof and will form a part of the contract. Copies of these papers, together with a copy of Standard Contract Form, including authorized additions or deletions, if any, will be furnished to or made available for the inspection of bidders by the office indicated in the published "Advertisement for Bids."
- 11.15.2 It is the intent of the plans and specifications that one shall supplement the other, but not necessarily duplicate one another. Any work called for in one and omitted in the other shall be executed as if called for in both in order that the work under the contract is fully completed according to the complete design as determined and decided by the Engineer.
- 11.15.3 In case of discrepancies in the plans, calculated dimensions shall govern. The plans shall govern where omissions occur in the Specifications as to items of equipment, materials or quantities. It shall be the responsibility of the Bidder to call to the attention of the Engineer obvious omissions of such magnitude as to affect the strength, adequacy, function, operation, completeness, or cost of any part of the work in ample time for amendment by Addendum prior to the opening date.

#### SECTION 11.16      TIME OF PERFORMANCE

When not otherwise specified, the bidder must state the least number of calendar days (Counting Sundays and Holidays) after date of receipt of "Notice to Proceed" in which he will commence performance, and the number of calendar days after the date of receipt of "Notice to Proceed" in which he will complete the work. In stating time the bidder should make due allowances for difficulties which may be encountered. The bidder shall not be excused because of difficulties, whether of weather or other factors, whether anticipated or not, unless by formal written suspension of the work by WP UTILITIES, INC.

## SECTION 11.17      SAMPLES

When samples are required, they must be submitted by the Bidder so as to reach the office designated prior to the hour set for opening the bids. Samples shall be furnished free of expense to the Owner, properly marked for identification, and accompanied by a list when there is more than one sample. The Owner reserves the right to mutilate or destroy any sample submitted whenever it may be considered necessary to do so for the purpose of testing. Samples not so mutilated or destroyed when no longer required to be retained in connection with the award or delivery of supplies, will be returned at the Bidder's expense, if such return is requested in the bid.

## SECTION 11.18      WITHHOLDING FOR NONRESIDENTS

- 11.18.1 The attention of Contractors is called to Part 2, Act No. 855, ACTS OF THE GENERAL ASSEMBLY OF SOUTH CAROLINA for 1958, entitled "WITHHOLDING FOR NON-RESIDENTS" which provides in part that "Any municipality \*\*\*\*\* hiring or contracting or having a contract with any nonresident taxpayer conducting a business of temporary nature carried on within this State, where such contract exceeds ten thousand (\$10,000) dollars or could reasonably be expected to exceed ten thousand (\$10,000) dollars, shall withhold two (2) percent of each and every payment made to such non-residents.
- 11.18.2 The conditions set forth in subsection A (2) may be waived by the South Carolina Tax Commission, provided the payee shall assure the Tax Commission by bond, secured by an insurance company licensed by the South Carolina Insurance Commission, or deposit of securities subject to approval by the State Treasurer, or cash which shall bear interest, that the Payee will comply with all applicable provisions of the Income Tax Act of 1926, as amended, and with the withholding requirements insofar as his obligations as a withholding agent is concerned." Proof of such coverage shall be filed with the Engineer before work is started.
- 11.18.3 If the Contractor fails to comply with the requirements of the South Carolina Tax Commission, two percent (2%) of each and every payment made to the Contractor shall be retained by WP UTILITIES, INC. to satisfy such requirements.

## SECTION 11.19      SECURITY FOR FAITHFUL PERFORMANCE

- 11.19.1 Simultaneously with his delivery of the executed contract, the Contractor shall furnish a surety bond or bonds in an amount at least equal to one hundred (100) percent of the amount of the contract price as security for the faithful performance of this contract and for payment of all persons performing labor on the project under this contract and furnishing materials in connection with this contract as specified in General Specifications included herein. The surety bond, or bonds, must be issued by a surety company licensed in the State of South Carolina with an "A" minimum rating of performance as stated in the most current publication of Best Key Rating Guide, Property Liability. Each Bond shall be accompanied by a "Power of Attorney" authorizing the attorney-in-fact to bind the surety and certified to include the date of the Bond. Said surety shall be subject to approval by the Owner's attorney.
- 11.19.2 The Owner reserves the right to accept or reject the qualifications of any bonding company submitted by the Contractor.

## SECTION 11.20      INSURANCE

- 11.20.1 The Contractor shall procure and shall maintain during the life of this contract, whether such operation be by himself or by a subcontractor or anyone directly or indirectly employed by either of them, such insurance as required by statute, ordinance or this contract, to adequately protect the Owner from any claims or damages, including bodily injury or death, which may arise from them during operations under this contract.
- (1) The insurance requirements set forth in these instructions are established to provide assurance that as a minimum the Contractor shall perform the indemnification required by paragraph 31.0 et.seq.
  - (2) All insurance required shall be primary insurance as respects WP UTILITIES, INC., its officials, employees and volunteers. Any insurance or self-insurance maintained by WP UTILITIES, INC., its officials, employees, or volunteers shall be in excess of insurance provided by the Contractor and shall not contribute to it.
  - (3) Insurance shall be obtained for not less than the limits of liability as specified in these instructions.
  - (4) The Contractor shall include all subcontractors as insured under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverage for subcontractors shall be the same as provided in these instructions for the Contractor.

- (5) Each insurance policy required by these instructions shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, reduced in coverage or in limits unless thirty (30) days prior written notice, by certified mail, return receipt requested, has been given to WP UTILITIES, INC.

11.20.2 Worker's Compensation Insurance: The Contractor shall procure and shall maintain during the life of this contract, Workman's Compensation Insurance for all of the employees to be engaged in work on the project under this contract, and in case any such work is sublet, the Contractor shall require the subcontractor similarly to provide Workmen's Compensation Insurance for all of the latter's employees to be engaged in such work unless such employees are covered by the protection afforded by the Contractor's Workmen's Compensation Insurance. The Contractor shall not permit any person who is not protected by Worker's Compensation Insurance or a properly approved self-insured Worker's Compensation Program to perform any activity related to this contract.

11.20.3 Liability Insurance: The Contractor shall procure and maintain for the duration of the contract insurance against claims for any injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the Contractor, his agents, representatives, employees or subcontractors. WP UTILITIES, INC. shall be specifically covered as an insured in all liability policies obtained in compliance with the provisions of this paragraph. The amount of such insurance shall be as follows:

- (1) Commercial General Liability Insurance: Coverage at least as broad as Insurance Service Office Form CG 00 01 11 85 in an amount not less than \$500,000.00 per occurrence and \$1,000,000.00 aggregate combined single limit for bodily injury, personal injury, and property damage.

- (2) Automobile Liability Insurance: \$500,000.00 combined single limit per accident for bodily injury and property damage.

11.20.4 Owner's and Contractor's Protective Liability Insurance: In addition to all other insurance requirements contained in these instructions, the Contractor shall provide a separate policy of Owner's and Contractor's Protective Liability Insurance issued in the name of WP UTILITIES, INC. in an amount not less than \$500,000.00 per occurrence combined single limit for bodily injury, personal injury, and property damage with an aggregate liability, not less than \$1,000,000.00. Coverage shall be at least as broad as provided in Insurance Service Office Form CG 00 09 11 85.

- 11.20.5 Builder's Risk Insurance: For the full contract price with WP UTILITIES, INC. as an insured and the Contractor as an additional insured.
- 11.20.6 Flood Insurance: The Contractor is required to carry, during the construction period, flood insurance for projects located in designated flood hazard areas in which the Federal Flood Insurance is available.
- 11.20.7 Proof of Coverage of Insurance: The Contractor shall furnish WP UTILITIES, INC. with a certificate showing satisfactory proof of carriage of the insurance required and such insurance shall be approved by WP UTILITIES, INC. prior to commencing work on his contract nor shall the Contractor allow any subcontractor to commence work on his subcontract until all similar insurance required of the subcontractor has been so obtained and approved.
- 11.20.8 Scope of Insurance: The insurance required under Items 10.20.3, 10.20.4, 10.20.5, and 10.20.6 hereof shall provide adequate protection for the Contractor and his subcontractors, respectively, as well as the Owner, against damage claims, which may arise from operations under this contract, whether such operations are by the insured or by anyone directly, or indirectly employed by him.
- 11.20.9 Special Hazards: The Contractor's and his subcontractor's Public Liability and Property Damage Insurance shall provide adequate protection against the following special hazards: Use of explosives, excavation, shoring and electrical hazards.

#### SECTION 11.21 ACCIDENT PREVENTION

Precaution shall be exercised at all times for the protection of persons and property. The safety provisions of applicable laws, building and construction codes shall be observed. Machinery, equipment, and other hazards shall be guarded in accordance with the safety provisions of the Manual of Accident Prevention in Construction, published by the Associated General Contractors of America, to the extent that such provisions are not in contravention of applicable laws.

#### SECTION 11.22 POWER OF ATTORNEY

Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

## SECTION 11.23      NOTICE OF SPECIAL CONDITIONS

11.23.1. Attention is particularly called to those parts of the contract documents and specifications, which deal with the following:

- (1) Inspection and testing of materials.
- (2) Insurance requirements.
- (3) Wage rates.
- (4) Stated allowance.
- (5) Nondiscrimination in employment.

## SECTION 11.24      LAWS AND REGULATIONS

The Bidder's attention is directed to the fact that all applicable State laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout and they will be deemed to be included in the contract the same as though herein written in full.

## SECTION 11.25      METHOD OF AWARD - LOWEST RESPONSIBLE BIDDER

11.25.1. The contract will be awarded, if it is awarded, to the lowest responsible bidder. Owner will decide which is the lowest responsible bidder, and in determining such bidder, the following elements will be considered for each bidder:

- (1) Maintains a permanent place of business.
- (2) Have adequate plant, equipment and personnel to perform the work properly and expeditiously.
- (3) Has suitable financial status to meet obligation incident to the work.
- (4) Has appropriate technical experience.

11.25.2. The Owner reserves the right to waive any formalities or to reject any or all bids and to make such awards, as in the opinion of WP UTILITIES, INC., appears to be to the best interest of WP UTILITIES, INC.

## SECTION 11.26      SIGNATURE TO BIDS

Each bid must give the full business address of the bidder and be signed by him with his usual signature. Bids by partnerships must furnish the full names of all partners and must be signed with the partnership name by one of the members of the partnership or by an authorized representative, followed by the signature and designation of the person signing. Bids by corporations must be signed with the legal name of the corporation, followed by the names of the state of incorporation and by the signature and designation

of the president, secretary, or other person authorized to bind it in the matter. The name of each person signing shall also be typed or printed below the signature.

A bid by a person who affixed to his signature the word "president", "secretary", "agent", or other designation, without disclosing his principal, may be held to be the bid the individual signing. When requested by the Owner, satisfactory evidence of the authority of the officer signing in behalf of the corporation shall be furnished.

#### SECTION 11.27 BIDS FOR ALL OR PART

Where bids are not qualified by specific limitation, the Owner reserves the right of awarding all or any of the schedules according to its best interest. Unless otherwise required in the specifications, bids for supplies shall be submitted in accordance with the numbered item or items given in the schedule. Alternative bids will not be considered unless called for on proposal forms or in the SPECIAL PROVISIONS.

#### SECTION 11.28 CONSTRUCTION SCHEDULE AND PERIODIC ESTIMATES

11.28.1. Immediately after execution and delivery of the contract and before the first partial payment is made, the Contractor shall deliver to WP UTILITIES, INC. an estimated construction progress schedule in form satisfactory to WP UTILITIES, INC., showing the proposed dates of commencement and completion of each of the various subdivisions of work required under the contract documents and the anticipated amount of each monthly payment that will become due the Contractor in accordance with the progress schedule.

? The Contractor shall also furnish: (a) a detailed estimate, giving a complete breakdown of the contract price; and (b) periodic itemized estimates of work done for the purpose of making partial payments thereon. The costs employed in making up any of these schedules will be used only for determining the basis of partial payments and will not be considered as fixing a basis for additions to or deductions from the contract price.

11.28.2. Equipment delivery schedule: The Contractor shall also prepare a schedule of anticipated shipping dates for materials and equipment. It is intended that equipment and materials be so scheduled as to arrive at the job site just prior to time for installation to prevent excessive materials on hand for inventory and the necessity for extensive storage facilities at the job site.

#### SECTION 11.29 PAYMENT

11.29.1. On or before the fifteenth (15) day of each month, WP UTILITIES, INC. will pay to the Contractor ninety (90) percent of the value of the work performed, less aggregate of previous payments, as estimated, provided the Contractor submits his estimate on or before the third day of the month. Estimates submitted later will require additional time for processing for payment.



- (1) In preparing estimates, the material delivered on the site and preparatory work done may be taken into consideration.
- (2) All material and work covered by partial payments made shall thereupon become the sole property of WP UTILITIES, INC., but this provision shall not be construed as relieving the Contractor from the sole responsibility for the care and protection of materials and work upon which payments have been made or the restoration of any damaged work, or as a waiver of the right of WP UTILITIES, INC. to require the fulfillment of all the terms of the contract.

11.29.2. Upon final completion and acceptance by WP UTILITIES, INC. of all work covered under this contract, WP UTILITIES, INC. will pay to the Contractor the amount remaining to be paid him under the contract. The final pay request must include a materials list.

SECTION 11.30      SPECIAL NOTICE TO BIDDERS ON CONTRACTS OVER \$1,000,000.00

11.30.1 On EPA funded projects, the Environmental Protection Agency requires a pre-award conference if a proposed construction contract exceeds one million dollars to determine if the prospective contractor is in compliance with the Equal Employment Opportunity requirements of Executive Order 11246 of September 24, 1965.

11.30.2 In such instances, the Environmental Protection Agency may schedule a meeting at which the prospective contractor must specify what affirmative action he has taken or proposes to take to assure equal employment opportunity which must be approved by the Environmental Protection Agency before award of the contract will be authorized.

SECTION 11.31      INDEMNIFICATION

10.31.1 The Contractor will indemnify and hold harmless the Owner and the Engineer and their agents and employees from and against all claims, damages, losses and expenses, including attorney's fees arising out of or resulting from the performance of the work, provided that any such claims, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or the injury to or destruction of tangible property, or taking of property, including the loss of use resulting therefrom; and is caused in whole or in part by any negligent or willful act or omission of the Contractor and Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.

- 10.31.2 In any and all claims against the Owner or Engineer or any of their agents or employees, by any employee of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any Subcontractor under workmen's compensation acts, disability benefit acts or other employee benefit acts.
- 10.31.3 The obligation of the Contractor under this paragraph shall not extend to the liability of the Engineer, his agents or employees arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications.

## Article 12.

### GENERAL SPECIFICATIONS

#### SECTION 12.1 CONTRACT AND CONTRACT DOCUMENTS

The instructions to bidders, contractor's bid, plans, specifications and addenda shall form part of this contract and the provisions thereof shall be as binding upon the parties hereto as if they were herein fully set forth. The table of contents, titles, headings, running headlines and marginal notes contained herein and in said documents are solely to facilitate reference to various provisions of the contract documents and in no way affect, limit or cast light on the interpretation of the provisions to which they refer.

#### SECTION 12.2 DEFINITION OF TERMS

12.2.1 Whenever in these specifications and in the contract, or any documents or instruments pertaining to construction where these specifications govern the following terms are used; the intent and meaning shall be interpreted as follows:

- (1) A.A.S.H.O. - American Association of State Highway Officials.
- (2) A.N.S.I. - American National Standards Institute.
- (3) A.S.T.M. - American, Society for Testing Materials.
- (4) A.W.W.A. - American Water Works Association.

12.2.2 Advertisement for Bids - The notice calling attention of bidders to the time and place for receiving bids, containing a brief description of the work and briefly setting forth the requirements and conditions for submission of proposals.

12.2.3 Bid Bond - The security to be furnished by the bidder as a guaranty of good faith that he will enter into a contract with WP UTILITIES, INC. and to execute the required bond covering the work contemplated if it is awarded to him.

12.2.4 Bidder - Any individual, partnership, firm or corporation acting directly or through a duly authorized representative, submitting a proposal for the work contemplated.

12.2.5 Bridges - Water-way structures having a clear span in excess of 12 feet.

- 12.2.6 Owner - As Owner of the project, WP UTILITIES, INC. acting through its authorized representatives.
- 12.2.7 Contract - The written agreement covering the performance of the work. The contract shall include the Proposal, Plans, Specifications, Special Provisions, Work Order, Contract Bond, Insurance Certificates, Addenda and all other documents pertinent to the contract. It shall also include any and all supplemental, signed, written agreements duly authorized by the owner which may be executed to complete the work, in accordance with the intent of the plans and specifications, in an acceptable manner.
- 12.2.8 Contract Period - The period from the date specified in the contract for the commencement of work to the date specified for its completion, both dates, inclusive.
- 12.2.9 Contract Sum - The aggregate sum obtained by multiplying the number of units of each class of work, as shown on the contract, by the unit prices specified in the contract for the class of work.
- 12.2.10 Contractor - The individual, partnership, firm or corporation executing a contract acting directly or through his lawful agents or employees, who is primarily liable for the acceptable performance of the work for which he was contracted and also for the payment of all legal debts pertaining to the work.
- 12.2.11 Contractor- (Sub) - Any person, firm, or corporation who has, with the approval of the Engineer, contracted with the Contractor to execute and perform-in his stead all or part of the contract.
- 12.2.12 Drainage - Drainage is the system of pipes, drainage ways, ditches, and structures by which surface or subsurface waters are collected and conducted from the streets, alleys, or adjacent properties.
- 12.2.13 Employee - Any person working on the project to which these specifications apply, and who is under the direction or control of, or receives compensation from the Contractor or sub-contractor.
- 12.2.14 Engineer - WP Utilities, Inc.'s Engineer or his duly authorized representative.
- 12.2.15 Equipment - All machinery, together with the necessary supplies for upkeep and maintenance and also all tools and apparatus necessary for the proper construction and acceptable completion of the work.
- 12.2.16 Extra Work - Work performed by the Contractor, authorized by formal Change Order signed by the City Engineer, in order to complete the contract in an acceptable manner but for which there is no basis of payment provided in the contract.

- 12.2.17 Inspector - An authorized representative of the Engineer assigned to make all necessary inspection of the work performed or being performed, or of the materials furnished or being furnished by the Contractor.
- 12.2.18 Intention Of Terms - Whenever, in these specifications or upon the plans the words "directed", "required", "permitted", "ordered", "prescribed", "designed", or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Engineer is intended and similarly, the words "approved", "acceptable", "satisfactory", or words of like import, shall mean approved by, or acceptable to or satisfactory to the Engineer subject in each to the final determination of the City Manager.
- (1) Any reference to a paragraph or sub-paragraph within a section shall include the general provision of the section or sections and paragraph pertinent thereto.
- 12.2.19 Instructions To Bidders - The clauses setting forth, in detail, the information relative to the proposed work and requirements for the submission of Proposals.
- 12.2.20 Item - A specified class of work on which definite prices are set forth in the proposal or in the contract.

The Engineer may designate 12.2.21 Laboratory - The official testing laboratories of WP UTILITIES, INC. or such other laboratories as.

- 12.2.22 Landscaping - The planning, planting, establishing and caring for trees, shrubs, vines and other vegetation to provide shade, reduce dust, control erosion or improve the general appearance of the project.
- 12.2.23 Lump Sum - Total price for an item or items of work regardless of the number of units of work to be performed.
- 12.2.24 Maximum Density and Optimum Moisture Content - The term "maximum density" as applied to the compaction of soils and similar materials shall be construed as the greatest density obtainable from the material passing a 3/4+" mesh sieve when it is compacted in the manner prescribed in current A.A.S.H.O. Method of Test T-90 or the current Standard Proctor Method. Optimum moisture content shall be construed as the percentage of moisture corresponding to the maximum density in the above described test.
- 12.2.25 Notice of Award - A written notice to the successful bidder stating that his bid has been accepted and that, in accordance with the terms of the Advertisement for Bids and Specifications, he is required to execute the contract and furnish satisfactory contract bond.

- 12.2.26 Notice to Proceed - A written notice to the Contractor of the date on which he is to begin the prosecution of the work for which he has contracted.
- 12.2.27 "Or Equal" Clause - "Or equal" shall be construed to mean that material or equipment will be acceptable only when, in the judgement of the Engineer, they are composed of parts of equal quality, or equal workmanship and finish, designed and constructed to perform or accomplish the desired result as efficiently as the indicated brand, pattern, grade, class, make or model. Written approval will be obtained from the Engineer prior to installation.
- 12.2.28 O.S.H.A. - Occupational Safety and Health Act.
- 12.2.29 Official Publications - The official publications and the formal resolutions and notices relative to the proposed improvements that are required by law to be published in a prescribed manner and that have actually been published in accordance with the statutes relating thereto. Attention is directed to the fact that these official publications are by statute vested with all of the force and effect of contract obligations.
- 12.2.30 Owner - The owner is WP Utilities, Inc., which, through its authorized representatives and governing body, has authorized the project and can by their own acts bind the Utility in the accompanying contract.
- 12.2.31 Performance and Payment Bond - The approved form of security furnished by the Contractor and his Surety as a guarantee of good faith and ability on the part of the Contractor to execute the work in accordance with the terms of the plans, specifications and contract, and the payment of all debt pertaining to the work and the maintenance of the work as provided by law or by these specifications.
- 12.2.32 Plans - The official plans, working drawings or supplemental drawings or exact reproductions thereof, approved by the Utility, official copies of which are on file in the Department of utilities and Engineering and which show the location, character, dimensions, and detail of the work to be done and which are to be considered as part of the contract, supplementary to these specifications.
- 12.2.33 Project - A project for the accomplishment of the improvement of certain municipal streets, alleys, sewers, data, etc., based on a program of improvement adopted by WP Utility, Inc. Officials.
- 12.2.34 Proposal - The written offer of the bidder, when submitted on the approved Proposal Form, to perform the contemplated work and furnish the necessary materials in accordance with the provisions of the plans and these specifications.
- 12.2.35 Proposal Form - The approved form on which the written offer of formal bid is to be prepared and submitted for the construction to be done.

- 12.2.36 Public Agency - Public agency means a Municipality or other political subdivision; or a tax-supported organization.
- 12.2.37 Resident Engineer - The representative of WP UTILITIES, INC. directly in charge of the work.
- 12.2.38 Right-of-Way - All lands or other property interests provided or acquired for the construction of the improvement and its appurtenances.
- 12.2.39 Roached - The area between the inside slopes of ditches or tops of fill slopes.
- 12.2.40 Roadway - The part of the right-of-way included between the outside lines of the slopes, gutters and side ditches of the road.
- 12.2.41 Shoulders - That portion of the road, street, or alley lying outside of the surfaced areas.
- 12.2.42 Sodding - The transplanting of established turf in the form of blocks or strips usually referred to as "sods".
- 12.2.43 Special Provisions - The specific clauses setting forth conditions or requirements peculiar to the project under consideration, covering work or material involved in the Proposal and estimate, which are not thoroughly or satisfactorily stipulated in these specifications.
- 12.2.44 Specifications - The directions, provisions, and requirements contained herein, supplemented by special provisions, pertaining to the method and manner of performing the work, or to the quantities, or the qualities of materials to be furnished under the contract.
- 12.2.45 Station - One hundred (100) lineal feet.
- 12.2.46 Structures - As used in these specifications, structures shall mean culverts, including headwalls and end-walls, drainage construction such as storm sewers, gutters, catch basins, drop inlets, manholes, retaining walls and other construction, which may be encountered in the building of the improvements.
- 12.2.47 Sub-Grade - That portion have the road, street or alley upon which the base-course is to be placed.
- 12.2.48 Superintendent - The executive representative for the Contractor present on the work site at all times during progress, authorized to receive and fulfill instructions from the Engineer and capable of superintending the work efficiently.

- 12.2.49 Supplemental Agreement - A written Proposal and Agreement executed by the Contractor and by WP UTILITIES, INC., with the consent of the Contractor's Surety covering work not included in the Plans and Proposal which is necessary to the proper completion of the project.
- 12.2.50 Surety - The corporate body or individuals which are bound by the contract bond and the payment bond with and for the Contractor, and which engage to be responsible for the entire and satisfactory fulfillment of the contract and for the payment of all lawful debts incurred in fulfilling the contract.
- 12.2.51 Surfacing - The combined sub base, base and surface course of pavement shall be considered as a single unit, excluding shoulders, unless otherwise denoted.
- 12.2.52 The Work - All work including the furnishing of materials, tools, equipment, incidentals, etc., to be performed by the Contractor under the terms of the contract, plans and specifications.
- 12.2.53 Turf - The mass of matter, roots of grass and certain other low-growing plants, including the layer of soil in which they are growing and the plant growth showing above. The density and quality of the turf mat will be influenced by the environmental conditions and service requirements, but in general maximum coverage with a minimum yield is desired, as distinct from agricultural productions.
- 12.2.54 Turfing - The process involved in the planting and development of turf, including preparation and improvement of soil, sowing, or planting, cultural practices and other operations necessary to its establishment and maintenance.
- 12.2.55 Working Day - A working day shall be any day other than a legal holiday or Sunday. Sundays or holidays on which the Contractor's forces engage in regular work, requiring the presence of an inspector, will be considered as working days.
- 12.2.56 Working Time - The working time, stated in the Proposal and the contract, shall be given as a definite number of working days or as the date by which all work shall be completed as an essential part of the contract. When the notice to Contractors and the Proposal form set forth the date of commencement and date of completion, then the contract period shall be the period from the specified date for beginning the work, to the specified date of completion, both dates inclusive. The contract period may be extended by the Utility as provided in these specifications, in which event the contract period includes the new date of completion.



## SECTION 12.3 ADDITIONAL INSTRUCTIONS AND DETAIL DRAWINGS

The Contractor will be furnished additional instructions and detail drawings as necessary to carry out the work included in the contract. The additional drawings and instructions thus supplied to the Contractor will coordinate with the contract documents and will be so prepared that they can be reasonably interpreted as part thereof. The Contractor shall carry on the work in accordance with the additional detail drawings and instructions. The Contractor and the Engineer will prepare jointly: (a) a schedule fixing the dates at which special detail drawings will be required, such drawings, if any to be furnished by the Engineer in accordance with said schedule, and (b) a schedule fixing the respective dates for the submission of shop drawings, the beginning of manufacture, testing and installation of materials, supplies and equipment, and the completion of the various parts of the work; each such schedule to be subject to change from time to time in accordance with the progress of the work.

## SECTION 12.4 SHOP OR SETTING DRAWINGS

The Contractor shall submit promptly to the Engineer two copies of each shop or setting drawings prepared in accordance with the above said schedule. The Contractor shall make corrections to the drawings as indicated by the Engineer and furnish the Engineer two corrected copies and additional copies if requested. The Contractor will be responsible for the accuracy of such drawings and for their conformity to the plans and specifications.

## SECTION 12.5 MATERIALS, SERVICES AND FACILITIES

12.5.1 It is understood that, except as otherwise specifically stated in the contract documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, gas, lights, power, transportation, superintendence, taxes, insurance, temporary construction of every nature and all other services and facilities of every nature whatsoever necessary to execute, complete, and deliver the work within the specified time.

12.5.2 Any work necessary to be performed after regular working hours, on Sundays, or legal holidays, shall be performed without additional expense to the Owner.

## SECTION 12.6 CORRELATION OF PLANS AND SPECIFICATIONS

The contract, plans and specifications are to be interpreted as mutually explanatory or supplementary, and therefore any features shown in one and not in the other shall have the same force and effect as if shown in both, and shall be fully executed. Prior to execution of the work, the Contractor shall check all drawings and specifications, and shall immediately report all errors, discrepancies, conflicts and omissions discovered therein to the Engineer. The Engineer will adjust all such errors, discrepancies, conflicts, and omissions, and adjustment by the Contractor without prior approval shall be at his own risk. The settlement of any complications arising from such adjustments shall be made by the Contractor at his own expense and to the satisfaction of WP Utilities.

## SECTION 12.7 OWNERSHIP OF DRAWINGS

- 12.7.1 All drawings, specifications and memoranda relating to the work are the property of the City and are to be carefully used and returned to the City at completion, or cessation of the work for any cause.
- 12.7.2 Contract Documents to be furnished: Five (5) sets of the plans and specifications will be furnished to the Contractor without charge. Additional sets can be secured from the Engineer upon request at cost of reproduction. The Contractor shall have available on the project site at all times one (1) copy of each of said plans and specifications.

#### SECTION 12.8 PHYSICAL DATA

The drawings, which accompany and form a part of this contract, have been prepared on the basis of surveys and inspections of the site, and are intended to present an essentially accurate indication of the physical conditions at the site. However, this shall not relieve the Contractor of the necessity for familiarizing himself with physical conditions at the site, and any discrepancies found in the drawings shall not be grounds for claims by the Contractor against WP Utility, or for non-performance of work specifically provided for under the contract.

#### SECTION 12.9 CONTRACTOR'S TITLE TO MATERIALS

No materials or supplies for the work shall be purchased by the Contractor or by any subcontractor subject to any chattel mortgage, conditional sales contract, or other agreement by which an interest is retained by the seller. The Contractor warrants that he has good title to all materials and supplies used by him, free from all liens, claims or encumbrances.

#### SECTION 12.10 INSPECTION AND TESTING MATERIALS, QUALITY AND GUARANTEES

- 12.10.1 All work done and materials furnished shall be subject to the inspection of the Engineer or his inspector(s) on the work site, or at the place of shipment, delivery, or manufacture of materials to insure that the work done and materials furnished under this contract conform in every respect to the plans, specifications and instructions. All improper work shall be reconstructed and all materials, which do not conform to the requirements of the specifications, shall be removed from the work upon notice from the Engineer of the rejection of such materials.
- (1) The Engineer shall have the right to mark rejected materials to distinguish them as such. The Contractor shall furnish the inspector with the necessary facilities and assistance for carrying out his duties. The Engineer and the inspectors to obtain the finished product in accordance with the plans, specifications and contract with as little inconvenience to the public as possible shall supervise the work and materials. WP Utilities, Inc., shall not assume any liabilities of the Contractor or relieve him of any of his obligations.

- 12.10.2 All materials, supplies and parts, or assemblies thereof, entering into the work shall be tested as specified herein or otherwise required, according to approved methods for the particular type and class of work.
- 12.10.3 Persons, laboratories, shall make the inspection and testing of materials and finished articles to be incorporated in the work or agencies approved by WP Utility. The Contractor shall pay the cost of such inspection and testing.
- 12.10.4 When required, all tests and trials shall be made in the presence of the authorized representative of the Engineer. When the presence of the inspector is not required, sworn statements in duplicate of the tests made and the results thereof shall be furnished to the Engineer as soon as possible after completion of tests.
- 12.10.5 Where standard published specifications of recognized authorities or organizations are specified, the latest revision of such specification at the time the work is executed shall govern, unless otherwise authorized or directed.
- 12.10.6 Materials of construction, particularly those upon which the strength and durability of the structure may depend, shall be subject to inspection and testing to establish conformance with specifications and suitability for uses intended.
- 12.10.7 All materials, parts and equipment furnished and incorporated in the work shall be high grade, free from defects and imperfections, of recent manufacture and unused. Workmanship shall be of the highest grade and in accordance with the best modern standard practice.
- 12.10.8 The Engineer shall determine the quality-and quantity of the several kinds of work and materials, which are included in this contract. He shall determine all questions relating to lines, levels and dimensions of the work, and interpretations of the plans and specifications.
- 12.10.9 Where the specifications call for certified copies of mill or shop tests to establish conformance with the specifications, it shall be the responsibility of the Contractor to assure the delivery of such certifications to the Utilities Engineer.
- 12.10.10 No materials or finished articles shall be incorporated in the work until such materials and finished articles have passed any required tests. The Contractor shall promptly segregate and remove rejected material or finished articles from the site of the work. Failure to condemn the material on preliminary inspection shall not be grounds for acceptance if defects are found later.
- 12.10.11 The testing and approval of materials by the laboratory, or laboratories, shall not relieve the Contractor of his obligations to fulfill his contract and guarantee workmanship and materials. The Contractor may, at his option,

and at his own expense, cause such other tests to be conducted, as he may deem necessary to assure suitability, strength and durability of any material or finished article.

#### SECTION 12.11 SUPERVISION

- 12.11.1 The work shall be conducted under the general direction of the Engineer and will be inspected by inspectors appointed by him. The inspectors will keep a record of work done and see that the location and limit marks are kept in proper order. The presence of an inspector shall not relieve the Contractor of responsibility for the proper execution of the work.
- 12.11.2 The Contractor shall furnish at his own expense such labor, organization and materials as may be reasonably necessary in inspecting and supervising the work. Should the Contractor refuse, neglect, or delay compliance with this requirement, the specified facilities may be furnished and maintained by WP Utility and the cost thereof deducted from any amounts due, or to become due the Contractor.
- 12.11.3 Unless otherwise provided for in these specifications, all expense of inspection will be borne by the Contractor.
- 12.11.4 It is understood that any instruction or decision given by the Engineer is to be considered the instruction or decision of WP UTILITIES, INC., where, under the terms of this contract, such decision rests with the Engineer.
- 12.11.5 The work shall be entirely under the control of the Engineer, and he, or his authorized representative, shall have access to same at all times. The Engineer may require the Contractor to dismiss any employee he deems to be incompetent or careless.

#### SECTION 12.12 STANDARD PRODUCTS

All materials, supplies and articles furnished shall be as specified. Where unspecified, they shall be the standard products of recognized, reputable manufacturers. The standard products of manufacturers other than those specified will be accepted when it is proven to the satisfaction of the Engineer, that they are equal in strength, durability, usefulness and convenience for the purpose intended. Any changes required in the details and dimensions indicated on the drawings, for the substitution of standard products other than those specified, shall be properly made as approved by the Engineer and at the expense of the Contractor.

#### SECTION 12.13 PATENTS

- 12.13.1 The Contractor shall hold and save the WP Utility, Inc., and its officers, agents, servants, and employees harmless from liability of any nature or kind, including cost and expense for, or on account of, any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the contract, INCLUDING ITS USE by WP UTILITIES, INC., unless otherwise specifically stipulated in the contract documents.
- 12.13.2 If the Contractor uses any design, device or materials covered by letter, patent, or copyright, he shall provide for such use by suitable agreement with WP UTILITIES, INC. for such patented or copyrighted design, device or material. It is mutually agreed and understood that, without exception, the contract prices shall include all royalties or costs arising from the use of such design, device or materials in any way involved in the work. The Contractor and/or his Sureties shall indemnify and save harmless WP UTILITIES, INC. from any and all claims for infringement by reason of the use of such patented or copyrighted design, device or materials or any trademark or copyright in connection with work agreed to be performed under this contract, and shall indemnify the WP UTILITIES, INC. for any cost, expense or damage which it may be obliged to pay by reason of such infringement at any time during the prosecution of the work or after completion of the work.

#### SECTION 12.14 SURVEYS, LINES, GRADES, STAKES AND TEMPLATES

- 12.14.1 The line, grade and location of the work will be staked by the Engineer or his assistants after a twenty-four hour's notice by the Contractor. The Contractor shall execute his work in conformity to the lines and grades given by the Engineer and shall protect the same against displacement. The Contractor's execution of the work shall also conform to any and all requirements stated or shown in easement descriptions and/or plats applicable to the work. In the event stakes become displaced, the work depending on those stakes shall be discontinued until the Engineer replaces those stakes. If the stakes are damaged or lost, the Contractor will be required to pay a flat fee of four (\$4.00) dollars per stake plus a twenty-five (\$75.00) dollar "mobilization fee" to have them reset.
- 12.14.2 The Contractor shall provide such personnel and assistance as the Engineer may request to aid in the staking, and shall furnish such planks, stakes, spikes, nails and other materials as may be required.

#### SECTION 12.15 LAWS AND REGULATIONS

The Contractor shall keep himself fully informed of all Federal, State, City and County laws, ordinances and regulation in any manner affecting those engaged or employed in the work, or the materials used in the work, or in any way affecting the conduct of the work, and of all orders and decrees of bodies or tribunals having any jurisdiction or authority over same. If any discrepancy or inconsistency is discovered in this contract, or in the drawings or specifications herein referred to, in relation to any such laws, ordinances, regulation, order or decree, he shall immediately report the same in writing to WP UTILITIES, INC. He shall at all times observe and comply with all such existing and

future laws, ordinances, and regulations, and shall protect the surety, WP Utilities, Inc., and their agents against any claims or liability arising from or based on the violation of any such law, ordinance, regulation, order or decree, whether by himself or by his employees.

## SECTION 12.16 CONTRACTOR'S PERSONNEL

The Contractor shall keep competent and experienced foremen in charge of their particular class of work. Whenever the Contractor is absent from any part of the work the Superintendent or Foreman in charge of that particular work shall receive and execute the instructions of the Engineer. Any Foreman or other employee on the work considered by the Engineer to be incompetent or disorderly shall be removed immediately, upon request of the Engineer.

## SECTION 12.17 CONTRACTOR'S OBLIGATION

- 12.17.1 The Contractor shall, in good workmanlike manner, do and perform all work and furnish all supplies and materials, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary or proper to perform and complete all the work required by this contract, within the time herein specified, in accordance with the provisions of this contract and said specifications, and in accordance with the plans and drawings covered by this contract and any and all supplemental plans and drawings, and in accordance with the directions of the Engineer as given from time to time during the progress of the work. He shall furnish, erect, maintain, and remove such construction plant and such temporary works as may be required. The Contractor shall observe, comply with, and be subject to all terms, conditions, requirements and limitations of the contract and specifications, and shall do, carry on, and complete the entire work to the satisfaction of the Engineer and the WP UTILITIES, INC.
- 12.17.2 The Contractor agrees to personally see to the execution of the contract and not to sublet any portion of the same without the consent, in writing, of the WP UTILITIES, INC. The Contractor shall be responsible for the faithful completion of that part of the work. The subletting will not release the Contractor from any of his obligations or requirements under this contract.
- 12.17.3 The Contractor shall immediately remove and reconstruct or replace, at his own expense, all work or materials not in accordance with this contract. The payment of estimates, including certain work or materials, shall not be considered as an acceptance of that work or those materials at any time before the final acceptance of the entire work and materials included in the contract.

## SECTION 12.18 WEATHER CONDITIONS

In the event of temporary suspension of work or during inclement weather, or whenever the Engineer shall direct, the Contractor will, and will cause his subcontractors to protect carefully his and their work and materials against damage or injury from the weather. If, in the opinion of the Engineer, any work or materials are damaged or injured by season of failure of the Contractor or his subcontractors to protect their work, such materials shall be removed and replaced at the expense of the Contractor.

SECTION 12.19    PROTECTION OF MATERIAL, WORK AND PROPERTY,  
EMERGENCY

- 12.19.1    The Contractor shall, at all times, safeguard the WP UTILITIES, INC.'S property from damage or injury or loss in connection with this contract. He shall at all times protect his own work and all materials of every description both before and after use in the work. The Contractor shall replace or make good any such damage, loss or injury unless such be caused directly by errors contained in the contract, or by WP UTILITIES, INC. or its duly authorized representatives.
- 12.19.2    The Contractor shall provide and enclosing or special protection from weather deemed necessary by the Engineer without additional cost to WP UTILITIES, INC. Partial payments under the contract will not relieve the Contractor from responsibility. When materials and work at the site, which have been partly paid for, are not adequately protected by the Contractor, such materials will be protected by WP UTILITIES, INC. at the expense of the Contractor, and no further partial payment will be made thereon.
- 12.19.3    In case of any emergency, which threatens loss or injury of property and/or safety or life, the Contractor will be allowed to act, without previous instructions from the Engineer, in a diligent manner. He shall notify the Engineer immediately thereafter. Any claim for compensation by the Contractor due to such extra work shall be promptly submitted to the Engineer for approval.
- 12.19.4    Where the Contractor has not taken action but has notified the Engineer of an emergency threatening injury to persons or damage to the work or any adjoining property, he shall act as instructed or authorized by the Engineer. The amount of reimbursement claimed by the Contractor on account of any emergency action shall be determined in the manner provided in the item entitled "Changes in Work" in these specifications.

SECTION 12.20    REPORTS, RECORDS AND DATA

The Contractor shall submit to WP UTILITIES, INC. such schedule of quantities and costs, progress schedules, payrolls, estimates, records and other data as WP UTILITIES, INC. may request concerning work performed or to be performed under this contract.

SECTION 12.21    ORGANIZATION, SUPERINTENDENCE, PLANT PROGRESS

- 12.21.1    The Contractor shall employ only competent and skilled personnel on the work. The Contractor shall give his personal superintendence to the work or shall have a competent superintendent or foreman present at all times when the work is in progress, which shall have full authority to act for the Contractor. It is understood that such representative shall be acceptable to the Engineer and shall be one who can be continued in that capacity for the particular job involved unless he ceases to be on the Contractor's payroll.



- 12.21.2 The Contractor shall, upon, demand from the Engineer, immediately remove any Superintendent, Foreman or workman whom the Engineer considers incompetent or undesirable.
- 12.21.3 The Contractor shall employ an ample force of properly experienced workers and provide construction plant properly adapted to the work, of sufficient capacity and efficiency to accomplish the work in a safe and workmanlike manner, at a rate of progress satisfactory to WP UTILITIES, INC.
- 12.21.4 Should the Contractor fail to maintain a rate of progress which, in the opinion of WP UTILITIES, INC., will complete work within the time limited specified, WP UTILITIES, INC. May require that additional men working, if necessary, during additional periods or shifts, or additional plant, or both, be placed on the work, or a reorganization of plant layout be effected in order that the progress of the work be brought up to schedule and so maintained. Should the Contractor refuse or neglect to increase the number of men, working period, or plant, or to reorganize the plant layout in the manner satisfactory to WP UTILITIES, INC., the latter may proceed under the provisions of the contract to rectify the conditions.

#### SECTION 12.22 ORDER OF WORK

The prosecution, order or sequence of the work shall be as approved by the Engineer, which approval, however, shall in no way affect the responsibility of the Contractor.

#### SECTION 12.23 CHANGES IN WORK

- 12.23.1 No changes in the work covered by the contract documents shall be made without having prior written approval of WP UTILITIES, INC. One, or a combination of the following methods shall determine charges or credits for the work covered by the approved change:
- (1) Unit bid prices previously approved.
  - (2) An agreed lump sum.
  - (3) The actual cost of: (a) labor, including foreman; (b) materials entering permanently into the work; (c) the ownership or rental cost of construction plant and equipment during the time of use on the extra work; (d) power and consumable supplies for the operation of power equipment; (e) insurance; and (f) Social Security, old age and unemployment contributions.
- 12.23.2 To the cost under 12.23.1(3) there shall be added a fixed fee to be agreed upon, but not to exceed 15 percent of the estimated cost of the work. The fee shall be compensation to cover the cost of supervision, overhead, bond, profit and any other general expense.

## SECTION 12.24      EXTRAS

Without invalidating the contract, WP UTILITIES, INC. may order extra work or make changes by altering, adding to or deducting from the work, the contract sum being adjusted accordingly, and the consent of the surety being first obtained where necessary or desirable. All the work of the kind bid upon shall be paid for at the price stipulated in the proposal, and no claims for any extra work or materials shall be allowed unless the work is ordered in writing by WP UTILITIES, INC., or the Engineer acting officially for WP UTILITIES, INC. and the price is stated in such order. Extra work shall be performed only upon the receipt of change orders as set forth in the preceding paragraph. Without a written order, the Contractor shall not be entitled to payment for extra work. Bills covering extra work shall be filed-with the Engineer within ten days after the work is completed.

## SECTION 12.25      TIME FOR COMPLETION; LIQUIDATED DAMAGES AND NO DAMAGES FOR DELAYS

- 12.25.1      It is hereby understood and mutually agreed by and between the Contractor and WP UTILITIES, INC. that the time for completion as specified in the contract is an essential condition of the contract. It is further mutually understood and agreed that the work embraced in this contract shall be commenced on a date to be specified in the notice to proceed.
- 12.25.2      The Contractor agrees that said work shall be prosecuted regularly, diligently and uninterruptedly at such rate of progress as will insure full completion thereof within the time specified. It is expressly understood and agreed, by and between the Contractor and WP UTILITIES, INC., that the time for completion of the work described herein is a reasonable time for completion of same, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.
- 12.25.3      If the Contractor shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof granted by WP UTILITIES, INC., then the Contractor does hereby agree, as a part consideration for the awarding of this contract, to pay to WP UTILITIES, INC. the amount specified in the contract, not as a penalty but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day that the Contractor shall be in default after the time stipulated in the contract for completing the work. The said amount is fixed and agreed upon by and between the Contractor and WP UTILITIES, INC. because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages WP UTILITIES, INC. would sustain and said amount shall be retained from time to time by WP UTILITIES, INC. from current periodic estimates.

- 12.25.4 It is further agreed that time is of the essence of each and every portion of this contract and of the specifications wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the contract an additional time is allowed for the completion of the work, the new time limit fixed by such extension shall be of the essence of this contract. Provided, that the Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due to:
- (1) Any preference, priority or allocation order duly issued by the Government.
  - (2) Unforeseeable cause beyond the control and without the fault or negligence of the Contractor, including but not restricted to acts of God, or of the public-enemy, acts of WP UTILITIES, INC., acts of another contractor in the performance of a contract with WP UTILITIES, INC.; fires, floods, epidemics, quarantine, restrictions, strikes, freight embargos, unusually severe weather; and
  - (3) Any delays of subcontractors or suppliers occasioned by any of the causes specified in subsections 12.25.4(1) and 12.25.4(2) of this article.
- 12.25.5 Provided, further, that the Contractor shall, within seven (7) days from the beginning of such delay, unless WP UTILITIES, INC. shall grant a further period of time prior to the date of final settlement of the contract, notify WP UTILITIES, INC. in writing of the causes of delay: WP UTILITIES, INC. shall ascertain the facts and extent of delay and notify the Contractor within a reasonable time of its decision in the matter, and grant such extension of time, as it shall deem suitable and just.
- 12.25.6 The Contractor agrees to make no claim for damages, additional payment or additional compensation because of any hindrance or delay in the performance of this contract occasioned by any act or omission to act by WP UTILITIES, INC. or any of its representatives or occasioned by any other cause whatsoever, whether such act, omission to act or cause be avoidable or unavoidable. Contractor agrees that any such claim shall be fully compensated for by an extension of time to complete the performance of this contract and such extension of time shall be Contractor's SOLE AND EXCLUSIVE REMEDY for any hindrance or delay in the performance of this contract.

## SECTION 12.26 CORRECTION OF WORK

All work, all materials, whether incorporated in the work or not, all processes of manufacture, and all methods of construction shall be at all times and places subject to the inspection of the Engineer. He shall be the final judge of the quality and suitability of the work, materials, processes of manufacture, and methods of construction for the purposes for which they are used. Should they fail to meet his approval, they shall be forthwith reconstructed, made good, replaced and/or corrected, as the case may be, by the

Contractor at his own expense. Rejected material shall immediately be removed from the site. If, in the opinion of the Engineer, it is undesirable to replace any defective or damaged materials or to reconstruct or correct any portion of the work injured or not performed in accordance with the contract documents, the compensation to be paid to the Contractor hereunder shall be reduced by such amount as, in the judgement of the Engineer, shall be equitable.

#### SECTION 12.27 SUBSURFACE CONDITIONS FOUND DIFFERENT

Should the Contractor encounter subsurface and/or latent conditions at the site materially differing from those shown on the plans or indicated in the specifications, he shall immediately give notice to the Engineer before they are disturbed. The Engineer will promptly investigate the conditions, and make recommendations to the owner regarding any changes he may find necessary. The Engineer and the Owner must approve changes. Any changes or adjustments approved by the Engineer and the Owner will be made in accordance with these specifications.

#### SECTION 12.28 CLAIMS FOR EXTRA WORK

No claims for extra work or cost shall be allowed unless it was in pursuance of a written order of the Engineer, and the claim is presented with the first estimate after the changes or extra work is done. When work is performed under the terms of Section 11.23 of these specifications, the Contractor shall furnish satisfactory bills, payrolls and vouchers covering all items of cost and when requested, give the WP UTILITIES, INC. access to accounts relating thereto.

#### SECTION 12.29 RIGHT OF WP UTILITY, INC. TO TERMINATE CONTRACT

12.29.1 In the event any of the provisions of this contract are violated by the Contractor or by any of his subcontractors, WP UTILITIES, INC. may serve written notice upon the Contractor and the surety of its intention to terminate the contract. Notices shall contain the reasons for the intention to terminate the contract. Unless within ten (10) days after the serving of the notice the violation or delay ceases and satisfactory arrangements for correction are made, the contract shall cease and terminate. In the event of termination, WP UTILITIES, INC. shall immediately serve notice thereof upon the surety and the Contractor. The surety shall have the right to take over and perform the contract; provided, however, if the surety does not commence performance thereof within ten (10) days from the date of the mailing of notice of termination, WP UTILITIES, INC. may take over the work and prosecute same to completion by contract at the expense of the Contractor. The Contractor and his surety shall be liable to WP UTILITIES, INC. for any excess cost occasioned WP UTILITIES, INC. thereby, and in such event WP UTILITIES, INC. may take possession of and utilize in completing the work any materials, appliances and plant that may be on the site of the work and necessary thereto.

- 12.29.2 If the Contractor should die, be declared incompetent, bankrupt or insolvent, or make an assignment for the benefit of creditors during the term of his contract, WP UTILITIES, INC. may terminate the contract in the manner and under the procedure set forth above with the exception that no notices to the Contractor Shall be required. However, WP UTILITIES, INC. must make a reasonable effort to notify the estate of the Contractor, his guardian, assignee, or legal representative of the intention to terminate and fact of termination, if there is any guardian, assignee, or legal representative at the time WP UTILITIES, INC. desires to terminate.

#### SECTION 12.30 CONSTRUCTION SCHEDULE AND PERIODIC ESTIMATES

- 12.30.1 After execution and delivery of the contract and before the first partial payment is made; the Contractor shall deliver to WP UTILITIES, INC. an estimated construction progress schedule in form satisfactory to WP UTILITIES, INC. It shall show the proposed dates of commencement and completion of each of the various subdivisions of work required under the contract documents and the anticipated amount of each monthly payment that will become due the Contractor in accordance with the progress schedule.
- 12.30.2 The Contractor shall also furnish: (a) a detailed estimate, giving a complete breakdown of the contract price; and (b) periodic itemized estimates of work done for the purpose of making partial payments thereon. The costs employed in making up any of these schedules will be used only for determining the basis of partial payments and will not be considered as fixing a basis for additions to or deductions from the contract price.
- (1) Equipment delivery schedule - The Contractor shall also prepare a schedule of anticipated shipping dates for materials and equipment. It is intended that equipment and materials be so scheduled as to arrive at the job site just prior to time for installation to prevent excessive materials on hand for inventory and the necessity for extensive storage facilities at the job site.
- (2) WP UTILITIES, INC. Right to Withhold Certain Amounts and Make Application Thereof -- The Contractor agrees that he will indemnify and save WP UTILITIES, INC. harmless from all claims growing out of the lawful demands of subcontractors, laborers, workmen, mechanics, material men, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in the performance of this contract. The Contractor shall, at WP UTILITIES, INC. request, furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged, or waived. If the Contractor fails to do this WP UTILITIES, INC. may, after having served written notice on the Contractor, either pay unpaid bills, of which WP UTILITIES, INC. has written notice, or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all lawful claims. When satisfactory evidence is furnished that all

liabilities have been fully discharged, payment to the Contractor shall be resumed in accordance with the terms of this contract. In no event shall the provisions of this paragraph be construed to impose any obligations upon WP UTILITIES, INC. to either the Contractor or his surety. In paying any unpaid bills of the Contractor, WP UTILITIES, INC. shall be deemed the agent of the contractor, and any payment so made by WP UTILITIES, INC. shall be considered as a payment made under the contract to the Contractor, and WP UTILITIES, INC. shall not be liable to the Contractor for any such payment made in good faith.

#### SECTION 12.31 PAYMENT

12. 31.1 The contractor shall submit his estimate for payment on or before the third day of each month WP UTILITIES, INC. will pay to the contractor ninety (90) percent of the value of the work performed, as estimated by WP UTILITIES, INC., less the aggregate of previous payments, on or before the fifteenth (15) day of each month. Estimates that are submitted later will require additional time for processing for payment.

- (1) In preparing estimates, the material delivered to the site and preparatory work done may be considered for payment.
- (2) All material and work covered by partial payments shall become the sole property of WP UTILITIES, INC. This provision shall not be construed as relieving the Contractor of the sole responsibility for the care and protection of materials and work upon which payments have been made, the restoration of any damaged work, or as a waiver of the right of WP UTILITIES, INC. to require the fulfillment of all terms of the contract.

12.31.2 Upon completion and final acceptance by WP UTILITIES, INC. of all work covered under this contract, WP UTILITIES, INC. will pay to the Contractor the amount remaining to be paid him under the contract.

#### SECTION 12.32 ACCEPTANCE OF WORK AND FINAL PAYMENT

12.32.1 Before final acceptance of the work and payment to the Contractor of the percentage retained by WP UTILITIES, INC., the following requirements shall be complied with:

- (1) Final Inspection -- Upon notice from the Contractor that his work is completed; the Engineer will make a final inspection. He shall notify the Contractor of all instances where his work fails to comply with the contract drawings and specifications and any defects he may discover. The Contractor shall immediately make alterations necessary to make the work comply with the contract drawings and specifications to the satisfaction of the Engineer.

- (2) Operating Test -- Before acceptance of the whole or any part of the work, it shall be subjected to tests to determine that it is in accordance with the contract drawings and specifications. The Contractor shall maintain all work in first-class condition for a thirty (30) day operating period after the work has been completed, the final inspection has been made, and the Engineer has notified the Contractor in writing that the work has been finished to his satisfaction. The retained percentage, as provided herein, will not become due or payable to the Contractor until after the thirty (30) day operating period has expired.
- (3) Cleaning Up -- Before the work is considered complete, all rubbish and unused material due to or connected with the construction must be removed and the premises left in a condition satisfactory to WP UTILITIES, INC. Streets, curbs, cross-walks, pavements, sidewalks, fence and other public and private property disturbed or damaged shall be restored to their former condition. Final acceptance will be withheld until such work is finished.
- (4) Liens - Final acceptance of the work will not be granted and the retained percentage will not be due or payable until the Contractor has furnished WP UTILITIES, INC. proper and satisfactory evidence under oath that all claims for labor and material employed or used in the construction of the work under this contract have been settled, and that no legal claims can be filed against WP UTILITIES, INC. for such labor or material.
- (5) Final Estimate-- Upon compliance with the above requirements, the Engineer will issue a certificate of final acceptance of the work. The Contractor shall then prepare his final estimate. After review and approval of the final estimate by the Engineer and WP UTILITIES, INC., the payment shall become due.

#### SECTION 12.33 ACCEPTANCE OF FINAL PAYMENT AS RELEASE

The acceptance by the Contractor of final payment shall be and shall operate as a release to the WP UTILITIES, INC. of all claims and all liability to the Contractor for all things done or furnished in connection with this work and for every act and neglect of WP UTILITIES, INC. and others relating to or arising out of this work. No payment, final or otherwise, shall operate to release the Contractor or his sureties from any obligations under this contract or the performance and payment bond.

#### SECTION 12.34 PAYMENTS BY CONTRACTOR

The Contractor shall pay: (a) for all transportation and utility services not later than the twentieth (20) day of the calendar month following that in which services are rendered; (b) for all materials, tools, and other expendable equipment to the extent of ninety (90) percent of the cost thereof not later than the twentieth (20) day of the calendar month following that in which such materials, tools, and equipment are delivered at the site of the project, and the balance of the cost thereof not later than the thirtieth (30) day

following the completion of that part of the work in or on which such materials, tools, and equipment are incorporated or used; and (c) to each of his subcontractors not later than the fifth (5) day following each payment to the Contractor, the respective amounts allowed the Contractor on account of the work performed by his subcontractors to the extent of each subcontractor's interest therein.

#### SECTION 12.35 CONTRACT SECURITY

The Contractor shall furnish a performance and payment bond in an amount at least equal to one hundred percent of the contract prices as security for the faithful performance of this contract, as security for the payment of all persons performing labor on the project under this contract and furnishing materials in connection with the contract. The performance bond and payment bond may be in one or in separate instruments in accordance with local law. Before-final acceptance, each bond must be approved by WP UTILITIES, INC.

#### SECTION 12.36 ASSIGNMENTS

The Contractor shall not assign the whole or any part of this contract or any money due or to become due hereunder without written consent of WP UTILITIES, INC. In case the Contractor assigns all or any part of any moneys due or to become due under this contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any moneys due or to become due to the Contractor shall be subject to prior claims of all persons, firms and corporations for services rendered or materials supplied for the performance of the work called for in this contract.

#### SECTION 12.37 MUTUAL RESPONSIBILITY OF CONTRACTORS

If through acts of neglect on the part of the Contractor, any other contractor or any subcontractor shall suffer loss or damage on the work, the Contractor agrees to settle with such other contractor or subcontractor by agreement or arbitration if such other contractor or subcontractor will so settle. If such other contractor or subcontractor shall assert any claim against WP UTILITIES, INC. on account of any damage alleged to have been sustained, WP UTILITIES, INC. shall notify the Contractor, who shall indemnify and save harmless WP UTILITIES, INC. against any such claim.

#### SECTION 12.38 SEPARATE CONTRACTS

The contractor shall coordinate his operations with those of other contractors. Cooperation will be required in the arrangement for the storage of materials and in the detailed execution of the work. The Contractor, including his subcontractor, shall keep informed of the progress and the detail work of other contractors and shall notify the Engineer immediately of lack of progress or defective workmanship on the part of other contractors. Failure of a contractor to keep informed of the work progressing on the site and failure to give notice of lack of progress or defective workmanship by others shall be construed as acceptance by him of the status of the work as being satisfactory for proper coordination with his own work.



## SECTION 12.39 SUBCONTRACTING

- 12.39.1 The Contractor may utilize the services of specialty subcontractors on those parts of the work, which under normal contracting practices are performed, by specialty subcontractors.
- 12.39.2 The Contractor shall not award any work to any subcontractor without prior written approval of WP UTILITIES, INC., which approval will not be given until the Contractor submits to WP UTILITIES, INC. a written statement concerning the proposed award to the subcontractor, which statement shall contain such information as WP UTILITIES, INC. may require.
- 12.39.3 The Contractor shall be as fully responsible to WP UTILITIES, INC. for the acts and omissions of his subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.
- 12.39.4 The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of the General Specifications and other contract documents insofar as applicable to the work of subcontractors and to give the contractor the same power as regards terminating any subcontractor that WP UTILITIES, INC. may exercise over the Contractor under any provisions of the contract documents.
- 12.39.5 Nothing contained in this contract shall serve to create any contractual relationship between any subcontractor and WP UTILITIES, INC.

## SECTION 12.40 USE OF PREMISES AND REMOVAL OF DEBRIS

The Contractor expressly undertakes at his own expense:

- (1) To take every precaution against injuries to persons or damage to property.
- (2) To store his apparatus, materials, supplies and equipment in such orderly fashion at the site of the work as will not unduly interfere with the progress of his work or the work of any other contractors.
- (3) To place upon the work or any part thereof only such loads as are consistent with the safety of that portion of the work.
- (4) To clean up frequently all refuse, rubbish, scrap materials, and debris caused by his operations, to the end that at all times the site of the work shall present a neat, orderly and workmanlike appearance.
- (5) Before final payment to remove all surplus material, false work, temporary structures, including foundations thereof, plant of any

description and debris of every nature resulting from his operations, and to put the site in a neat, orderly condition.

- (6) To effect all cutting, fitting or patching of his work required to make the same to conform to the plans and specifications and, except with the consent of the Engineer, not to cut or otherwise alter the work of any other contractor.

#### SECTION 12.41 QUANTITIES OF ESTIMATES

The estimated quantities of work to be done and materials to be furnished under this contract, shown in any of the documents, including the proposal, are given for use in comparing bids, and the right is especially reserved except as herein otherwise specifically limited, to increase or diminish them as may be deemed reasonably necessary or desirable by WP UTILITIES, INC. to complete the work contemplated by this contract, and such increase or diminution "shall in no way vitiate" this contract, nor shall any such increase or diminution give cause for claims or liability for damages.

#### SECTION 12.42 RIGHTS-OF-WAY AND SUSPENSION OF WORK

12.42.1 WP UTILITIES, INC. shall furnish all land and rights of way necessary for the carrying out of this contract and the completion of the work herein contemplated, and will use due diligence in acquiring said land and right of-way as speedily as possible. But it is possible that all lands and rights-of-way may not be obtained as herein contemplated before construction begins, in which event the Contractor shall begin his work upon such land and rights-of-way as WP UTILITIES, INC. may have previously acquired, and no claim for damages whatsoever will be allowed by reason of the delay in obtaining the remaining lands and right-of-way. Should WP UTILITIES, INC. be prevented or enjoined from proceeding with the work, or from authorizing its prosecution, either before or after the commencement, by reason of any litigation or by reason of its ability to procure any lands or rights-of way for said work, the contractor shall not be entitled to make or assert claim for damage by reason of said delay or to withdraw from the contract except by consent of WP UTILITIES, INC.; but time for completion of the work will be extended to such time as WP UTILITIES, INC. determines, such determination to be set forth in writing.

12.42.2 Only that portion of the rights-of-way necessary for construction shall be cleared of trees. All such trees so cut shall be sawed into commercial lengths and stacked adjacent to the right of way for the property owner. The right-of-way shall be cleared and grubbed of stumps. All underbrush, toppings, limbs, stumps and other debris resulting from the clearing of right-of-way shall be burned or hauled to a dumping ground approved by the owner. No burning of debris shall be performed in dry weather. Suitable precautions shall be taken to prevent the spread of fire and before starting any fire; a burning permit shall be secured from the City of Manning Fire Department.

- 12.42.3 It shall be the responsibility of the contractor to secure permission to remove trees from the right-of-way. Tree removal shall be in strict accordance with easement agreements between WP UTILITIES, INC. and property owners from whom easements were secured.

SECTION 12.43 GENERAL WARRANTY FOR ONE YEAR AFTER COMPLETION OF CONTRACT

For a period of at least one year after the completion of the contract, the contractor warrants the fitness and soundness of all work done and materials and equipment put in place under the contract. Neither the certificate of final acceptance, payment of the final estimate, nor any provision in the Contract Document, nor partial or entire occupancy of the premises by WP UTILITIES, INC. shall constitute an acceptance of work not done in accordance with the Contract Documents, nor relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall remedy any defects in the work and pay for any damage to other work resulting therefrom, which shall appear within a period of one year from the date of final acceptance of the work unless a longer period is specified. WP UTILITIES, INC. will give notice of observed defects with reasonable promptness.

SECTION 12.44 NOTICE AND SERVICE, THEREOF

- 12.44.1 All notices herein provided shall be considered as having been given upon being placed in the United States Mail, certified, postage prepaid, addressed to the contractor at the address herein set forth in the contract documents or to such other address as may be given to WP UTILITIES, INC. in writing.
- 12.44.2 All notices' required to be delivered to WP UTILITIES, INC. shall, unless otherwise specified in writing to the Contractor, be delivered to WP UTILITIES, INC., and any notice to or demand upon WP UTILITIES, INC. shall be sufficiently given if delivered to the office of said WP UTILITIES, INC., or if deposited in the United States Mail, certified, postage prepaid, in each case addressed to said WP UTILITIES, INC., unless otherwise specified in writing to the contractor by WP UTILITIES, INC.

SECTION 12.45 REQUIRED PROVISIONS DEEMED INSERTED

Each and every provision of law or clause required by law to be inserted in this contract shall be deemed to be inserted herein, and the contract shall be read and enforced as though it were included herein. If through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party the contract shall be amended to make such insertion or correction.

#### SECTION 12.46 PROTECTION OF LIVES AND HEALTH

In order to protect the lives and health of his employees under the contract, the Contractor shall comply with all pertinent provisions of the Occupational Safety and Health Act and the "Manual of Accident Prevention of Construction" issued by the Associated General Contractors of America, Inc., and shall maintain an accurate record of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from work, arising out of and in the course of employment on work under the contract. The Contractor alone shall be responsible for the safety, efficiency and adequacy of his plant, appliances and methods, and for any damage, which may result from their failure or their improper construction, maintenance or operation.

#### SECTION 12.47 WAGES AND OVERTIME COMPUTATION

The Contractor and each of his subcontractors shall comply with all applicable Federal, State and local laws or ordinances with respect to the hours worked by laborers and mechanics engaged in work on the project and with respect to compensation for overtime.

#### SECTION 12.48 PROHIBITED INTERESTS

No official of WP UTILITIES, INC., who is authorized in such capacity and on behalf of WP UTILITIES, INC. to negotiate, make, accept, approve, or to take part-in negotiating, making, accepting, or approving any architectural, engineering, inspection, construction or material supply contract or any subcontract in connection with the construction of the project, shall become directly or indirectly interested personally in this contract or in any part hereof. No officer, employee, architect, attorney, engineer, or inspector of or for WP UTILITIES, INC., who is authorized in such capacity, and on behalf of WP UTILITIES, INC. to exercise any legislative, executive, supervisory or other similar functions in connection with the construction of the project, shall become directly or indirectly interested personally in this contract or in any part thereof, any material supply contract, subcontract, insurance contract, or any contract pertaining to the project.

#### SECTION 12.49 PHOTOGRAPHS OF PROJECT

Where trenching is to be accomplished in a developed area, the Contractor will give WP UTILITIES, INC. 24 hours notice in advance of trenching operations so that photographs of the developed area can be made by a WP Utilities, Inc. photographer, in the event it is deemed necessary by WP UTILITIES, INC.

#### SECTION 12.50 INSPECTION BY AGENCIES

The representatives of the South Carolina Department of Health and Environmental Control and certain Federal agencies shall have access to the work wherever it is, in preparation or progress, and the Contractor shall provide proper facilities for such access and inspection. Upon Contractor's request, WP UTILITIES, INC.'S office will enumerate those agencies that shall have access to the work.

## SECTION 12.51 INTERRUPTION OF SERVICE

The contractor will operate no valve or other control device on the existing system without permission from WP UTILITIES, INC.

## SECTION 12.52 USE OF EXPLOSIVES

- 12.52.1 Should the Contractor elect to use explosives to loosen rock or for any other purposes in the prosecution of the work, he shall obtain the required permits and the written permission the City of Manning. The City Fire Chief and Police Chief shall be notified. The Contractor shall be responsible for determining whether a County permit is required and for obtaining any permit so required. The Contractor's methods and procedures in the transportation, handing, storage and use of explosives shall comply with requirements of Federal and State laws, County regulations, if applicable, City regulations, the Standard Fire Prevention Code and O.S.H.A. Rules and Regulations. The Contractor shall be responsible for and shall repair at his expense any damage caused by blasting or accidental explosions.
- 12.52.2 Blasting for excavation will be permitted only after securing the approval of the Engineer and only when proper precautions are taken for the protection of persons and property. The Engineer will fix the hours of blasting. The Contractor' methods and procedures in blasting shall conform to requirements of laws and regulations listed in item 11.52.1.

## SECTION 12.53 BARRICADES AND WARNING SIGNS

- 12.53.1 The contractor shall erect mark and maintain suitable barricades to protect and maintain public safety.
- 12.53.2 Barricades, warning signs and other safety devices shall meet the requirements of OSHA, South Carolina Department of Highways and Public Transportation and City of Manning requirements. No work will commence until the contractor has secured approval from the agency responsible for the right of way in which construction is proposed.

## SECTION 12.54 ENCROACHMENT PERMITS

The contractor shall not proceed until all encroachment permits, curb cut permits and railroad crossing permits have been secured.

## SECTION 12.55 COMPLETED PORTIONS OF WORK

The owner reserves the right to accept and use any portion of the completed work deemed necessary by WP UTILITIES, INC. to protect the public health and safety.

## SECTION 12.56 INGRESS AND EGRESS TO PUBLIC OR PRIVATE PREMISES

At crossings and other locations as may be directed by the County Engineer, open trenches shall be bridged in a secure manner to prevent interruption of travel upon roadways, sidewalks and driveways to public or private premises. The material used and the mode of constructing such bridges and approaches must be satisfactory to the Engineer. The cost of all such work must be included in the unit bid prices for other items.

## SECTION 12.57 PROTECTION OF EXISTING UTILITIES

- 12.57.1 The Contractor shall proceed with caution in excavations so that the exact location of underground structures may be determined. Prior to proceeding with excavation, the Contractor shall contact all utility companies in the area to aid in locating their underground services.
- 12.57.2 Damage done to existing utility lines, services, poles and other structures shall be replaced or repaired by the contractor at his expense. The approximate position of certain underground lines is shown on the plans for information. Existing small lines may not be shown. The contractor shall locate these and other possible underground utility lines and shall excavate and expose all existing underground lines in advance of excavation operations.
- 12.57.3 Removing and relaying existing utility lines and appurtenances, which in the opinion of the WP Utilities Engineer constitutes an obstruction to the completed line and grade of the new work, will be carried out by the owner of such obstructing utilities at its sole expense unless indicated otherwise on the plans or in the Special Provisions.

## SECTION 12.58 EXPERIENCE OF MANUFACTURE

The manufacturer of materials shall submit to WP UTILITIES, INC., when requested by the City Engineer, evidence of having consistently produced materials of satisfactory quality and performance for a period of at least two years.

## SECTION 12.59 EARTHWORK CLASSIFICATION

All excavation is unclassified unless otherwise specified in the Special Provisions. No direct payment will be made for rock excavation, the cost of which will be included in other bid items, unless called for in the Special Provisions.

## SECTION 12.60 ROCK EXCAVATION

- 12.60.1 Wherever "rock" is used as the name of an excavated material, it shall mean boulders or pieces of rock, concrete, or masonry measuring one-half (1/2) cubic yard or more, hard shale or solid ledge rock and masonry which, in the opinion of the Engineer, requires for its removal the continuous use of pneumatic tools or drilling and blasting. Where the proposal does not

contain a pay item for ROCK EXCAVATION, the additional cost of rock removal as defined by these specifications shall be paid on extra work basis unless otherwise specified in the Special Provisions.

- 12.60.2 Before payment is allowed for rock excavation, the contractor shall be required to demonstrate the material cannot be removed "by hand pick" or by power operated excavator or shovel. No payment will be made for Rock Excavation unless the contractor used air tools or explosives. No payment will be made for Rock Excavation unless the Engineer determines that the material meets the above criteria, and gives written approval for payment prior to excavation.

#### SECTION 12.61 SUBSURFACE EXPLORATION

All information available to the Owner, if any, on subsurface conditions will be made available for examination by prospective bidders. However, it is understood and agreed that the Owner shall in no way be held responsible for interpretation of this information, its accuracy or its thoroughness. Prospective bidders shall make any subsurface explorations they believe necessary to verify and supplement information received from the owner.

#### SECTION 12.62 EXPLORATORY EXCAVATION

Whenever, in the opinion of the Engineer, it is necessary to explore and excavate to determine the best line and grade for the construction of the proposed pipeline, the Contractor shall make explorations and excavations for such purposes.

#### SECTION 12.63 METHODS OF CONSTRUCTION

- 12.63.1 Where construction is called for through established lawns, both in County streets, and in private property, the sod shall be neatly cut, removed and carefully stored and kept watered until it is replaced by the contractor. Topsoil underlying lawn areas and all topsoil to be disturbed in private property, whether underlying lawn areas or not, shall be removed for its full depth and stockpiled separate from the remainder of the material removed from the trench. The contractor shall replace the topsoil so removed after the trenches have been backfilled. All trees and shrubbery interfering with the work or which may be damaged in pursuance of the work should be carefully removed, heeled and replaced by the contractor. Where any such terraces, lawns, shrubbery or other plantings will be disturbed by the contractor's-equipment or by the trenching or laying of pipe lines, the contractor will be required to remove, maintain in suitable condition, and replace all topsoil, sod, shrubbery and other things that may interfere with or be damaged by the work.
- 12.63.2 The Contractor will be required to furnish, maintain, and operate, at all times such equipment as is necessary to keep the streets and easements along the construction route in good condition throughout the life of this contract.

## SECTION 12.64 SITE PREPARATION

- 12.64.1 The site of the work shall be cleared of trees, brush, fences, buildings and obstructions occupying space needed for construction operation, finished utilities and structures. Provided however, no building or structure partially encroaching on the right-of-way, or located so as not to interfere with construction operations, shall be removed unless specifically noted on the plans or directed by the Engineer.
- 12.64.2 Upon completion of the work the Contractor will be required to dispose of all surplus material and rubbish, and to restore all public and private property, which has been damaged in the course of the work. Combustible, worthless matter will be disposed of in a manner consistent with Air Quality Control and Solid Waste Management Ordinances and State regulations as designated by the Engineer and approved by the appropriate authorities. Trees, shrubs and grass shall be removed strictly in accordance with easement agreements between property owners and WP UTILITIES, INC.

## SECTION 12.65 ACCESS ROAD

Where the work is not accessible from existing streets and roads, the Contractor shall prepare necessary roads, and grade or otherwise smooth irregular terrain, along the right-of-way so that material and power equipment may be moved to and operated on and along the site. Any work done under the foregoing requirements will be subject to the Engineer's approval; Easements and/or permission to construct such roads must be in the possession of the contractor.

## SECTION 12.66 PAYMENT FOR MISCELLANEOUS WORK AND SERVICES

The work and services outlined in paragraphs 11.63 through 11.65 will not be paid for directly. These costs will be included in the unit bid prices for other items.

## SECTION 12.67 PAVEMENT REMOVAL AND REPLACEMENT

- 12.67.1 All pavement to be removed and replaced will be done in accordance with Standard Detail WC #2, SSC #18 and Part 4, Article G (Formerly Article VIII, Chapter 30), City and / or County Code, attached following page GS-32. Pavement removal and replacement will include curb removal and replacement. No additional allowance will be made for the curb and gutter.
- (1) Where installation of the utility line is inside the paved area and the construction is generally paralleling the centerline of the paving, patching shall be done in accordance with Standard Detail WC#2A, WC#12, SSC#18A and SSC#19. The entire paved area shall be resurfaced. On streets with existing curb and gutter, the existing asphalt pavement shall be milled to a uniform depth of 1-1/4" below edge of gutter prior to resurfacing. The width of the milled area shall be as specified by the plans, or as directed by the Engineer, and the milled surface shall be reasonably smooth and free of scarification marks or



other damages. Resurfacing shall consist of application of "Plant Mix Asphalt Resurfacing" at the average rate of 150 pounds per square yard and shall include the labor, tools and equipment compaction of the surface course. No resurfacing will be allowed over concrete gutter and feathering edge of resurfacing is prohibited. This work shall be done in accordance with South Carolina Department of Highways and Public Transportation Specifications and will not be accepted by WP UTILITIES, INC. until the Contractor has received prior approval from the South Carolina Department of Highways and Public Transportation.

- (2) The WP Utilities Engineer will determine the areas to be resurfaced in the field after all patching over the new trench is inspected and found acceptable.

#### SECTION 12.68 REPLACING SHOULDER MATERIAL

Where utility lines are to be laid in the shoulder of paved streets and where shoulders have not been surface-treated, the Contractor will be required to remove and stockpile the select material used in the construction of the shoulders. Upon completion of backfilling, the select material so removed shall be replaced to full depth of material in its original position. The Contractor shall supply at his own cost select material needed to supplement the select material so removed. There will be no direct payment for this item, the cost of which shall be included in other bid items.

#### SECTION 12.69 PORTLAND CEMENT CONCRETE SIDEWALKS

The item "Remove and Replace P.C.C. Sidewalk" shall consist of furnishing all labor, tools, equipment and materials to remove existing sidewalk during construction, and replace it as directed by the Engineer or as shown on the plans. The Contractor shall dispose of all debris and no concrete chunks will be used in the backfill. Unit bid price per square foot shall include forming, curing and all other operations necessary to complete the work. Removal shall include sawing where a joint is not within four feet of the desired removal point.

For measurement and payment see the standard specifications for the type construction involved.

#### SECTION 12.70 SIGN - DO NOT DRINK! UNTESTED WATER!

The contractor shall maintain signs reading "UNTESTED WATER! DO NOT DRINK!" at all points from which untested water is drained or flushed from the new construction. The contractor may furnish signs of an approved size or he may obtain them from WP UTILITIES, INC. upon deposit of \$10.00 per sign. When the signs are returned in acceptable condition, the \$10.00 will be refunded by WP UTILITIES, INC.

## SECTION 12.71 UNSUITABLE BACKFILL MATERIAL

Where the excavated material is unsuitable for backfill purposes, the contractor shall furnish satisfactory material wasted from trench excavation in other locations, or from other sources selected by him.

The contractor shall not be paid directly for the disposal of unsatisfactory material, or the furnishing of suitable backfill material. These costs shall be included in other bid items.

## SECTION 12.72 INDEMNIFICATION

12.72.1 The Contractor will indemnify and hold harmless the Owner, the Engineer, their agents and employees from and against all claims, damages, losses and expenses, including attorney's fees arising out of or resulting from the performance of the work, provided that any such claims, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or the injury to or destruction of tangible property, or taking of property, including the loss of use resulting there from; and is caused in whole or in part by any negligent or willful act or omission of the Contractor and Subcontractor, anyone directly or indirectly employed by any of them or anyone, for whose acts any of them may be liable.

12.72.2 In any and all claims against the Owner, Engineer or any of their agents or employees, by any employee of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any Subcontractor under workmen's compensation acts, disability benefit acts or other employee benefit acts.

12.72.3 The obligation of the Contractor under this paragraph shall not extend to the liability of the Engineer, his agents or employees arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications.

## SECTION 12.73 TERMINATION FOR CONVENIENCE AND SUSPENSION OF WORK

12.73.1 Should WP UTILITIES, INC. be prevented or enjoined from proceeding with the work, or from authorizing its prosecution, either before or after the commencement, by reason of any litigation, rules, regulations, laws, or ordinances of another governmental entity, the Contractor shall not be entitled to make or assert claims for damage by reason of said delay or to withdraw from the contract except by consent of WP UTILITIES, INC. The time for completion of the work shall be extended to such time as WP UTILITIES, INC. determines, such determination to be set forth in writing.

12.73.2 WP UTILITIES, INC. shall, at its sole option and discretion, have the right to terminate this contract for any reason whatsoever by providing the Contractor with a notice of termination to be sent by registered mail, return receipt requested. A termination for default under Section 12.29 of this contract shall, if wrongfully made, be treated as a termination for convenience under this clause. Whenever the Contractor is terminated for convenience under this clause or is wrongfully terminated under any other clause of this contract, the Contractor shall only be entitled to the actual direct costs of all labor and material expended on the job prior to the effective date of the termination plus 15% or the Contractor shall be entitled to be paid a pro-rata percentage of the total contract price which is equal to its percent of completion, whichever of the two methods provides the lowest sum to be paid to the Contractor. In no event shall the Contractor be entitled to anticipatory profit or damages for any termination under this clause. In no event shall the Contractor be entitled to assert a claim in quantum merit or any other measure of damages other than that stated herein.

#### SECTION 12.74 RELATING TO UTILITY LINES IN STREETS

All Installation of utility lines in streets shall conform to the following:

##### 12.74.1 Permit Required

- (1) Prior to constructing any underground pipeline, utility line, cable line, etc., under a paved public street a permit shall be secured from the office of the County Engineer and SCDOT. The request for such permit shall be accompanied by an appropriate drawing, if applicable, showing the location of the proposed utility installation and any other pertinent information necessary to determine conflicts with other utilities requested.
- (2) The construction will be accomplished in accordance with specifications of the issued permits as shown on the attached drawing.
- (3) At the time of filing the application a permit fee to cover inspection might be required by the agencies.

##### 12.74.2 Boring Required on Major Streets

Only bored or cased crossings shall be permitted within the paved portion of major or arterial streets, except when soil and other conditions make boring impractical as determined by the approved permits or when an emergency is deemed to exist. All crossings shall be a minimum of twenty four (24) inches below the paved surface unless otherwise specifically approved by special permits.

#### 12.74.3. Emergency Cutting

An emergency shall be deemed to exist when the preservation of the peace, health and safety of the community and the inhabitants thereof is jeopardized. The determination of an emergency shall be made by an official of the utility designated in writing filed with the County Engineer. In crossing a major or arterial roadway when it is deemed an emergency, a cut may be made only after written approval by the designated official of the utility, which must be forwarded, to the County Engineer and SCDOT within twenty four (24) hours after the cut is made. A paving cut permit fee to cover inspection shall be charged, and the applicant shall be responsible for permanent repair of the cut in accordance with the current County specifications.

#### 12.74.4. Inspections

The line, boring or paving cut repair must be inspected and approved by WP Utilities, Inc., upon completion of the project and again one (1) year from that date during which period the applicant and/or owner shall remain liable for cost of repairs and any damages which may be due the County, SCDOT and WP Utilities, Inc., arising from such work.

#### 12.74.5 Bond Required

In addition to the permit fee to cover inspection, the applicant shall file with WP Utilities, Inc., a bond in the sum of \$5,000.00 approved by the Manager and WP Utilities, Inc.'s, Attorney as to form.

#### 12.74.6 Construction and Relocation Costs

Prior to construction of any underground utility line, pipeline, cable line, etc., under a paved street the applicant shall agree as a condition of the permit that the construction of said underground utility line, pipeline, cable line, etc., shall be constructed at the applicant's sole risk and expense and that- upon demand by WP UTILITIES, INC., when such demand is deemed necessary for a public street purpose, any such underground utility line, pipeline, cable line, etc., shall be relocated by the applicant at the applicant's sole expense.

### SECTION 12.75 PROTECTION OF TREE ROOT ZONES WITHIN STREET RIGHT-OF-WAY

12.75.1 The tree root zone is defined as the area extending outward from the face of the tree in all directions a distance of one (1) foot for each inch of diameter of the tree trunk measured 4.5 feet above the natural ground surface. Trenches shall not be permitted within this zone.

11.75.2 All pipes, conduits and similar underground structures shall be installed by the dry bore method. The minimum ground cover over the top of such pipes or conduits shall be 24 inches. Dry bores shall be placed as shown on detail DB-1 attached hereto.

## Article 13.

### **WATER DISTRIBUTION SYSTEM, MATERIALS AND CONSTRUCTION**

#### SECTION 13.1      GENERAL

These specifications contemplate the complete installation of certain water mains, valves and appurtenances incident to the construction of water main extensions to be connected to WP UTILITIES, INC. Water System. Construction detail drawings WC#1 through WC#11; WC#12 through WC# 14A attached hereto are a part of these specifications. No project will be constructed that does not comply with Article 3, Water Distribution System Design Standards.

- 13.1.1      Pipe shall be installed at the locations shown on the plans and to the position, alignment and grade shown thereon, or in the event of grade conflict, as directed by the Engineer.
- 13.1.2      All pipe, special castings and fittings for water distribution shall be furnished in weights, classes, and/or thickness in accordance with specifications as outlined herein and in the proposal form.
- 13.1.3      Pipe three (3) inches in diameter and smaller may be Schedule 80 PVC, cast iron or polyethylene. WP UTILITIES, INC. does not accept 10", 14" and 20" pipe for use in its water distribution system.
- 13.1.4      Water used for construction, testing and sterilizing will be furnished by WP UTILITIES, INC. through approved connections to its water system. Check valves to reduce possibility of contamination will be furnished by the contractor when directed by WP UTILITIES, INC.
- 13.1.5      All materials furnished by the contractor shall be delivered and distributed at the site by the contractor. The contractor at points designated by WP UTILITY, INC. and hauled to the distribution site shall pick up materials furnished by the owner.
- 13.1.6      Cast iron pipe, fittings, valves, hydrants, and accessories shall be loaded and unloaded by lifting with hoists or skidding so as to avoid shock or damage. Under no circumstances shall such materials be dropped. Pipe handled on skid ways shall not be skidded or rolled against pipe already on the ground.
- 13.1.7      In distributing the material at the site of the work, each piece shall be unloaded opposite or near the place where it is to be laid in the trench.

## SECTION 13.2

## CONSTRUCTION MATERIAL

- 13.2.1 All materials and products which come into contact with drinking water must be certified as meeting the specifications of the American National Standards Institute/National Sanitation Foundation (ANSI/NSF) Standard 61, Drinking Water System Components Health Effects.
- 13.2.2 “Lead free” pipe, pipe fittings, solders and flux must be used in installation of all water mains. Pipe and pipe fittings containing no more than 8.0 percent lead are considered "lead free". Solder and flux containing no more than 0.2 percent lead is considered "lead free".
- 13.2.3 Gaskets, O-rings, and other products used for jointing pipes, setting meters or valves, or other appurtenances which will expose the material to water shall not be made of natural rubber or any other material which will support microbiological growth. Lubricants, which will support microbiological growth, shall not be used for slip-on joints.
- 13.2.4 Ductile Iron Pipe - “Ductile iron pipe” will be designed in accordance with ANSI specification A 21.50 (AWWA C 150) of latest revision for a normal working pressure of 150 psi and Laying Condition "2". The pipe shall be manufactured in accordance with ANSI specification A 21.51 (AWWA C151) of latest revision. Joints shall be Bell and Spigot, Push-on (McWane Tyton, American Fastite, or equivalent), or Mechanical; unless otherwise called for on the proposal form. Pipe will be cement lined and seal-coated in accordance with ANSI specification A 21.4 (AWWA C 104) of latest revision.
- 13.2.5 Reinforced Concrete Pipe (Standard Detail WC #10) - Reinforced concrete pipe shall conform to the specifications of the American Water Works Association for Reinforced Concrete Water Pipe - Steel Cylinder Type, Prestressed, specification C-301 (latest revision). This pipe will be designed to withstand a normal working pressure of 150 psi with an allowance for water hammer of at least 40 percent of the working pressure and laid with CLASS C bedding. Depth of cover to be as shown on plan/profile sheets.
- The successful bidder shall submit a pipe-laying schedule prior to beginning of construction.
- 13.2.6 Asbestos Cement Pipe - Asbestos-Cement pipe is not approved for water distribution system construction.
- 13.2.7 Polyvinyl Chloride (PVC) Pipe
- (1) Polyvinyl chloride pipe shall conform to the specifications of the American Water Works Association Standard for Polyvinyl Chloride (PVC) Pressure pipe, 4" through 12", for water, specification C900 (latest revision), with the following supplemental specifications:

- (a) All polyvinyl chloride pipes shall be Pressure Class 150 and shall meet the requirements of DR18. Joints shall be Bell and Spigot, similar to Johns-Manville's "Blue Brute", Robintech's "White Knight", or approved equal.
- (2) Installation shall be in accordance with ANSI/ASTM D 2321 (latest revision). Only Class I, II and III embedment materials, as defined in paragraph 6 and Figure 1, may be used in bedding, hunching, or initial backfill.
  - (a) When installing C900 PVC pipe, all fittings and valves are to be installed with retaining glands (Mega lugs or approved equal).
- (3) Where PVC or Polyethylene pipe is used in water main construction, a continuous # 12 gauge blue insulated cooper tracer wire, approved by the manufacturer for direct burial, shall be installed in the trench and taped to the top of the pipe using 2" duct tape. The tracer wire shall terminate at each valve or meter and be arranged to allow connection of equipment for tracking pipe and prevent interference of operating the valve or meter. Underground connectors must be used on all splices. All connectors must be thoroughly wrapped in electrical tape.

#### 13.2.8 FITTINGS

- 13.2.8.1 All fittings shall be in accordance with ANSI specification A21.10 (AWWA C110) of latest revision and ANSI specification A21.11 (AWWA C111) of latest revision. The joints shall be Bell and Spigot, Push-on (McWane Tyton, American Fastite, or equivalent) or Mechanical; unless otherwise called for on the proposal form. Compact ductile iron mechanical joint fittings, shall be in accordance with ANSI specifications A21.53 (AWWA C153) of latest revision.
- 13.2.8.2 Fittings will be cement-lined and seal-coated in accordance with ANSI specification A21.4 (AWWA C104) of latest revision.
- 13.2.8.3 Fittings, four inch through 24-inch sizes, shall be Pressure Class 350 and 30 inch through 48-inch sizes shall be Pressure Class 250.

#### 13.2.9 SPECIALS AND FITTINGS FOR REINFORCED CONCRETE PIPE

Specials and fittings for reinforced concrete steel cylinder pipe shall conform to the details in accordance with American Water Works Association's standard specification C 301 (latest revision).

#### 13.2.10 SERVICE LINES (Standard Detail WC #1)

13.2.10.1 Service lines to each lot shall be provided to the property lines where called for on the plans.

- (1) Service lines 1 inch and smaller in diameter will be type K soft copper or Polyethylene PE 3408 Class 160-SDR-9 cts. Service connections to mains of all materials except PVC shall be made by the insertion of a 3/4-inch corporation stop where 3/4-inch service line is used or by the use of a service clamp. In the case of PVC mains, a service clamp is required for all outlet sizes 2" and smaller.
- (2) Installation fittings for Polyethylene tubing will be brass fittings with compression connections. Corporation stops 3/4 inch and 1 inch size shall be Mueller H15008, Hays 5200 CF, Ford F1000, McDonald 4701-T, or approved equal. Curb stops 3/4 inch and 1 inch size shall be Mueller B25170, Hays 4302 CJ, Ford B41-333W, McDonald 6102WT or 6102W, or approved equal. All compression connections are to be used with a steel insert liner at each connection made.
- (3) Service lines one and one half inches through three inches in diameter may be ASTM D 1785, Schedule 80 PVC pipe with gasketed joints.
- (4) Service lines above three inches in diameter will be PVC, cast iron or ductile iron meeting specifications for Water Distribution System, Materials and Construction, listed herein.
- (5) Backflow prevention devices are required for all water service connections. Double check valve and reduced pressure principle backflow prevention assemblies must be selected from the SCDHEC approved list. Also, a certified tester upon installation must test each assembly, once annually thereafter, and after any repairs. Refer to Article, Section 8.8 - Cross Connection Control/Backflow Prevention.

#### 13.2.11 STEEL CASING PIPE

13.2.11.1 Steel casing pipe for underground installation by dry bore and jacking shall be manufactured in accordance with ANSI specification A53 of latest revision. The steel pipe shall be Type S, Grade B, plain end beveled. Steel casing pipe, sizes 28 inches and larger shall conform to standard pipe dimensions contained in USA Standard USAS B36 of latest revision. All steel casing pipes shall be furnished in 20-foot lengths, all joints welded. The minimum wall thickness shall be as follows:

Nominal Diameter (inches)	Nominal Thickness (inches)
Under 14	0.188
14 and 16	0.219
18	0.250
20	0.281
22	0.312



Nominal Diameter (inches)	Nominal Thickness (inches)
24	0.344
26	0.375
28 and 30	0.406
32	0.438
34 and 36	0.469
38, 40 and 42	0.500

13.2.11.2 When casing is installed without benefit of a protective coating, and said casing is not catholically protected, the wall thickness shown above shall be increased to the nearest standard size which is a minimum of 0.063 inch greater than the thickness shown except for diameters under 12 3/4 inches.

#### 13.2.12 FIRE HYDRANTS (Standard Details WC #3, WC #4, and WC #4A1

13.2.12.1 All fire hydrants shall conform to the American Water Works Association's standard C502 (latest revision) and shall be guaranteed for one hundred fifty (150) pounds water working pressure. Each hydrant shall have a six (6) inch hub connection, one standard pumper nozzle and two nozzles for 2 %z inch diameter hose. Hose threads to be National Standard.

13.2.12.2 Hydrants shall be of the size commercially recognized as five (5) inch hydrants with 5 1/4 inch valve opening. Hydrants shall include all materials necessary to bring the hydrant to its location above finished grade, including extensions or offset fittings. Provide an offset fitting at sloped areas where required for the hydrant connections to be located above finished grade. Locate the offset between the shut-off valve and hydrant. Provide Grade Look as manufactured by Assured Flow Sales, Inc. or approved equal.

(1) During fire hydrant installation, all fire hydrant valves are to be restrained as close to the main line as possible with an approved hydrant tee or retaining gland (Mega lugs or approved equal).

13.2.12.3 Operating nuts shall open right.

13.2.12.4 Hydrants approved for use are as follows:

Mueller - Centurion  
American Darling - Traffic Model #B62B-1  
Kennedy - Guardian  
M&H Style 929 Reliant (Epoxy Shoe Only)  
Clow - Medallion  
U.S. Pipe - Metropolitan 250  
Waterous - WB67 Pacer

13.2.12.5 Additional fire hydrants will be reviewed for approval upon request. Written approval from WP Utilities Engineer must be obtained in order to use any fire hydrant not listed in Section 12.2.12.4.

#### 13.2.12 GATE VALVES (Standard Detail WC#7)

13.2.13.1 Gate valves shall be of the double gate pattern with parallel seat, hub ends, iron body, bronze-stemmed, designed for 150-psi normal working pressure from both directions and conforming to the American Water Works Association standard specification C 500 (latest revision). Valves 24 inches and larger shall be equipped with by-pass valve.

13.2.13.2 All gate valves shall be equipped with cast iron valve boxes and covers of the adjustable or extension type, similar to the type now being used where required by WP UTILITIES, INC. and weighing approximately ninety-three pounds. Provide and install an extension stem for all gate valves where the operator nut is more than 60" below finished grade. Valves shall open left.

13.2.13.3 Three inch and smaller valves are to be bronze gate valves with a non-rising stem, wedge disc and a test pressure of 250 psi. The valves are to be Wolverine #467 bronze gate valves, Jenkins #370 bronze gate valves or approved equal.

13.2.13.4 Gate valves 3" through 12" may be resilient seated gate valves conforming to the American Water Works Association standard specification C 509 (latest revision). Resilient seated valves shall have internal ferrous metal surfaces fully coated with durable epoxy and have integrally cast bronze stem nut and be designed for external stem failure when excessive closing torque is applied with no failure of the pressure retaining parts.

13.2.13.5 Gate valves 24 inches and larger shall be mechanical joint and equipped with beveled gears enclosed in grease cases with grease fittings and with by-pass, scrapers and rollers. These valves shall have two such valve boxes each, one for operating stem on bevel gear and one by-pass valve.

#### 13.2.14 BUTTERFLY VALVES (Standard Detail WC#7A)

Butterfly valves shall meet the American Water Works Association standard specification C504 rubber seat for Class 150B (latest revision). The butterfly valves shall be mechanical joint, flanged, push-on or combinations thereof, and furnished with manual operators. Provide and install an extension stem for all butterfly valves where the operator nut is more than 60" below finished grade. Valves shall open left.

### 13.2.15 POLYETHYLENE ENCASEMENT

Gray cast iron pipe, ductile iron pipe, fittings, valves and other appurtenances installed at locations where the water main crosses an existing metal utility line shall be encased in polyethylene in accordance with ANSI and AWWA C105 (latest revision) where called for on the plan. No direct payment will be made for this item, the cost of which will be included in other bid items.

### 13.2.16 CONCRETE

This section includes all concrete work required, of every description, shown or specified, including pavements, bedding concrete, thrust blocks, etc. All materials incorporated in the concrete shall conform to the South Carolina Department of Transportation Standard Specifications for Highway Construction, latest edition.

### 13.2.17 REINFORCING STEEL

Reinforcing steel shall be of new billet steel intermediate grade made by the open-hearth process, conforming to the requirements of the "Standard Specifications for Billet Steel Concrete Reinforcement Bars", Serial Designation C15-33 of the ASTM A615 (latest revision). Bars must be deformed in rolling, and the design of the deformation shall be in accordance with ASTM Designation A615 (latest revision). In addition to the reinforcing indicated on the plans, the Contractor shall furnish all necessary support bars, tie bars, etc., required for properly supporting and spacing the bars in the forms. The reinforcement will be subject to field inspection for rust, shape and dimensions.

### 13.2.18 AIR RELEASE VALVES (Standard Detail WC #6)

13.2.18.1 At each high point along the water main the Contractor shall install an air release valve as follows:

- (1) Crispin type "N", Model No. P10 with 1/4 inch orifice; APCO Model No. 200A with 1/4 inch orifice, or Val-Matic Model No. 38 with 3/16 inch orifice, or approved equal, are authorized for use. All shall have a working pressure of 0 to 150 psi, and a 1-inch NPT connection. The valve shall be attached to the pipeline by means of a 1-inch corporation stop, 1 inch type K copper tubing, 1-inch curb stop, and shall be housed in a cast iron meter box. Contractor is to coordinate the location of the air release valve so that it is located on the high point of the water main as it is actually installed in the field. See Standard Detail WC#6.

## SECTION 13.3 CONSTRUCTION METHOD

### 13.3.1 CLEARING AND GRUBBING

- 13.3.1.1. The contractor shall do all necessary clearing and grubbing along the line of the work; however, he will not be allowed to remove or otherwise damage any trees or shrubbery other than those which, in the opinion of the WP UTILITIES, INC., are necessary for the protection of the work. All work shall be in accordance with easement agreements between WP UTILITIES, INC. and property owners. Easements may be reviewed in the office of the WP UTILITIES, INC. One copy will be furnished to the successful bidder on his request.
- 13.3.1.2. Upon completion of the work the Contractor will be required to dispose of all surplus material and rubbish and restore all public and private property, which has been damaged in the course of the work. The work and services outlined under "Clearing and Grubbing" will not be paid for as such and the Contractor shall distribute the cost for performing such work and services among the various items on which unit prices are called for.
- 13.3.2 TRENCHING (Standard Detail WC#2, WC#9 through WC#11)
- 13.3.2.1 All trenches and excavation shall be backfilled immediately after the pipes are laid therein, unless other protection of the pipeline is directed. The backfill material shall be selected and deposited with special attention to proper bedding of the pipe. Except where special methods of bedding and tamping are provided for, clean earth, sand or rock dust shall be solidly tamped about the pipe. Minimum cover shall be as follows:
- (1) Minor subdivision piping, 8 inch diameter and less, 30 inch minimum cover.
  - (2) Twelve-inch diameter, 36-inch minimum cover.
  - (3) Sixteen inch diameter and larger, 48 inch minimum cover.
  - (4) All piping to be located outside a dedicated easement (i.e. in South Carolina Department of Transportation right-of-way) shall have a 48-inch minimum cover.
  - (5) Special conditions other than those listed shall be approved in writing by WP UTILITIES, INC.
  - (6) Separation of water mains and sanitary sewers shall be in accordance with "Ten State Standards".
- 13.3.2.2 Trenching shall be in accordance with AWWA C-600 (latest revision), Sections 12.3.1 and 12.3.2. Minimum trench width shall be pipe diameter plus two feet. All excavated materials, which are unsuitable for backfilling the trench, shall be wasted in an area provided by the Contractor and approved by WP UTILITIES, INC.

- 13.3.2.3 The bottom of the trenches shall be graded in such a manner as to provide a firm bearing for the pipe. The use of boards or other material to support the pipe will not be permitted. Any soft or unstable foundations encountered shall be removed and replaced with suitable material, thoroughly compacted, at the Contractor's expense. Bell holes shall be of sufficient size to allow proper construction.
- 13.3.2.4 The Contractor shall perform all excavation of every description and of whatever substances encountered, to the depths indicated on the drawings or as otherwise specified. During excavation, material suitable for backfilling shall be piled in an orderly manner, a sufficient distance from the banks of the trench to avoid overloading and to prevent slides or cave-ins. OSHA regulations shall govern.
- 13.3.2.5 Where trenching is in a paved area, the pavement and base shall be removed a minimum of 12 inches on each side of the trench in order to place the edge of the new paving upon undisturbed soil. There will be no direct payment for this "extra" width excavation, the cost of which shall be included in the unit bid price for "Remove and Replace Pavement".
- 13.3.2.6 Where trenching is adjacent to slopes, either cuts or fills, the Contractor will not be permitted to level or alter or otherwise damage these slopes for the purpose of using any equipment such as trenching machines or back-hoes, unless special permission, in writing, is given the Contractor by the WP Utilities Engineer, and the Contractor is cautioned to examine the locations of the proposed water lines with this in mind.
- 13.3.2.7 Trench widths shall be as follows when construction is under an improved surface:

<u>Nominal Pipe Diameter (inches)</u>	<u>Minimum in Earth and Rock (inches)</u>
2	36
3	36
4	36
6	36
8	36
12	36
16	40
18	42
24	54
30	60
36	66
42	72
48	78
54	84
60	96

- 13.3.2.8 To protect persons from injury and to avoid property damage, adequate barricades, construction signs, torches, warning lanterns and guards as required shall be placed and maintained during the progress of the construction work. All material piles, equipment, and pipe that may serve as obstructions to traffic shall be enclosed by fences or barricades and shall be protected by proper lights when the visibility is poor. Safety rules and regulations of local authorities shall be observed.
- 13.3.2.9 All excavations shall be dewatered properly before laying pipe. Where running sand is encountered, dewatering shall be done by well pointing whenever possible. Where soil conditions are not favorable for use of well points, French drains of crushed stone or gravel shall be constructed to suitably located sumps and the water removed by bailing or pumping. All cost of equipment, labor, and materials required for dewatering shall be included in the prices bid for water mains.
- 13.3.3 BACKFILLING (Standard Detail WC#9 through WC#11)
- 13.3.3.1 Backfilling shall be in accordance with Section 3.5 of AWWA C-600 (latest revision) except as indicated below.
- 13.3.3.2 In backfilling trenches the material shall first be carefully placed around the pipe and thoroughly tamped up to the elevation of the top of the pipe in layers not exceeding six inches in thickness by means of power-driven tampers; the remainder of the trench shall then be filled in layers not more than six inches in thickness and each layer thoroughly tamped with power driven tampers. Where backfilling material is too wet for satisfactory tamping, the material shall be allowed to dry or dry material shall be hauled in. The Contractor will be held responsible for settlement over all trenches and, where necessary, he shall add material, which shall be thoroughly tamped in the prescribed manner.
- 13.3.3.3 All backfilling of excavated portions requiring pavement replacement shall be mechanically tamped in six-inch layers, using heavy-duty tampers, such as pneumatic tampers with tamping foot attachment. Each layer shall be thoroughly tamped to a density equivalent to at least 95 percent of an AASHTO T-99-49 Proctor Curve.
- 13.3.3.4 The Contractor will be required to furnish, maintain and operate at all times such equipment as is necessary to keep the streets along the route of operation in good condition throughout the life of this contract. This work and service will not be paid for as such and the Contractor shall distribute his cost for performing such work and services among the various items on which unit prices are called for.
- 13.3.3.5 Excavated rock shall not be mixed with material selected for the tamped backfill under and around the pipe up to a level of at least two inches above

the pipe, nor with backfill material used to complete the final twelve inch backfill layer at original ground surface.

13.3.3.6 All surplus rock excavated shall be removed and wasted at points designated by WP UTILITIES, INC.

13.3.3.7 Whenever the trenches have not been properly filled, or if settlement occurs, they shall be refilled, smoothed off and finally made to conform to the surface of the ground. Backfill shall be carefully placed and the original surface restored to the full satisfaction of the Engineer.

#### 13.3.4 ROCK EXCAVATION

13.3.4.1 Wherever "rock" is used as the name of an excavated material, it shall mean boulders or pieces of rock, concrete, or masonry measuring one-half ("1/2") cubic yard or more, hard shale or solid ledge rock and masonry which, in the opinion of the Engineer, requires for its removal the continuous use of pneumatic tools or drilling and blasting.

13.3.4.2 Before payment is allowed for rock excavation, the contractor shall be required to demonstrate that the material cannot be removed "by hand pick" or by power operated excavator or shovel. No payment will be made for Rock Excavation unless the contractor used air tools or explosives. No payment will be made for Rock Excavation unless the Engineer determines that the material meets the above criteria, and gives written approval for payment prior to excavation.

13.3.4.3 Should the Contractor elect to use explosives to loosen rock or for any other purposes in the prosecution of the work, he shall obtain the required permits and the written permission of the Engineer. The City Fire Chief and Police Chief shall be notified. The Contractor shall be responsible for determining whether a County permit is required and for obtaining any permit so required. The Contractor's methods and procedures in the transportation, handling, storage and use of explosives shall comply with requirements of Federal and State laws, County regulations, if applicable, City regulations, the Standard Fire Prevention Code and O.S.H.A. Rules and Regulations. The Contractor shall be responsible for and shall repair at his expense any damage caused by blasting or accidental explosions.

13.3.4.4 Blasting for excavation will be permitted only after securing the approval of the Engineer and only when proper precautions are taken for the protection of persons and property. The Engineer will fix the hours of blasting. The Contractor's methods and procedures in blasting shall conform to requirements of laws and regulations listed in item 12.3.4.3.

### 13.3.5 CONNECTION TO EXISTING WATER MAIN

The Contractor will be required to connect the proposed mains with certain existing mains. The approximate locations of these existing mains and connections are noted on plans but it will be incumbent upon the Contractor to ascertain the exact locations of these mains.

### 13.3.6 EARTH CUSHION

Where water mains are. Laid over rock or under sanitary sewers, storm drains, gas lines, water mains, telephone ducts or other buried structures, the water mains shall be laid so as to provide a minimum six inch earth cushion between the proposed mains and the existing structures, unless relief from this restriction is given by WP UTILITIES, INC. in any specific location. In any case minimum separation required for sanitary sewers shall conform to "Ten State Standards".

### 13.3.7 JOINTS FOR PRESTRESSED CONCRETE CYLINDER PIPE

13.3.7.1 After connections have been made, the exposed metal areas shall be grouted with a cement grout in accordance with the manufacturer's direction and the joints shall be protected against too rapid drying and against damage until final set has taken place.

13.3.7.2 In laying prestressed concrete cylinder pipe, the Contractor shall use sufficient beveled joints, short pieces and specials so that deflected joints are not opened over 1/2 inch on one side. The entire work of laying the pipe shall be done in strict accordance with the published recommendations of the manufacturer.

13.3.7.3 The Contractor shall make all connections between the new construction and existing mains as called for on the plans. Cost of this work shall not be paid for directly, but will be included in other bid items.

### 13.3.8 PIPE LAYING

13.3.8.1 Pipe laying shall be in accordance with AWWA C-600, Section 12.3.3 and 12.3.4 or latest revision except figure 1 and figure 2, laying conditions.

13.3.8.2 Closure of Open Pipes. The ends of all dead end pipes shall be securely closed to prevent entry of contaminants prior to backfill of the trench as specified on the plans. At the end of the work day or at any time the work is to be left unattended, the open end of all pipes shall be securely closed with plugs, to prevent the entry of trash, debris or vermin.

### 13.3.9 SETTING VALVES, FITTINGS AND HYDRANTS

13.3.9.1 Valves, fittings and hydrants shall be set in accordance with AWWA C-600 sections 12.3.6 and 12.3.7 or latest revision. Appurtenances not covered



therein shall be set in a manner approved by the Engineer. Hydrants are to be set in accordance with Standard Detail WC#3 and WC#4 herein.

- 13.3.9.2 During fire hydrant installation all fire hydrant valves are to be restrained as close to the main line as possible with an approved hydrant tee or retaining glands (Mega lugs or approved equal).

#### 13.3.10 CONCRETE THRUST BLOCKS. ANCHORS AND PIERS

- 13.3.10.1 When directed by the Engineer or where called for on the plans, the Contractor shall install concrete blocks, anchors, and piers to support the pipe and to prevent movement at bends placed in the line. The Engineer will direct the Contractor as to the size, shape, and extent of such concrete blocking. See Standard Detail WC-14 and 14A for pipe sizes larger than 30", the Engineer shall determine the soil bearing capacity and specify in detail the type and extent of restraint required.

- 13.3.10.2 Before placing metal reinforcement it shall be free from rust, scale, or other coatings that will destroy or reduce the bond. Reinforcement shall be formed to the dimensions indicated on the plans. Cold bends shall be made around a pin having a diameter of four or more times the least dimensions of the bar. Metal reinforcement shall not be bent or straightened in a manner that will injure the material. Metal reinforcement shall be accurately placed and secured, and the Engineer shall approve the design.

Reinforcement shall be placed in strict accordance with the details of the approved shop drawings. The reinforcement in walls, slabs, beams and foundations shall be spaced by means of approved chairs or precast mortar or concrete blocks. All intersections of reinforcement shall be wired together except that laps and splices shall be separated to allow development of proper bond for each bar. The minimum clear distance between spliced bars shall not be less than the largest of the following: (1) the bar diameter; (2) one inch; and (3) one and one-third times the maximum size of the coarse aggregate. Placing plans and bending diagrams (shop drawings) furnished by the fabricator shall show sufficient plan, elevation and sectional views which, in the opinion of the Engineer, will permit accurate checking and placing of all reinforcement.

#### 13.3.11 SAMPLING OUTLETS

Three-fourths (3/4) inch outlets shall be provided as required insuring adequate sampling of water during sterilization tests.

### SECTION 13.4 TESTING AND STERILIZING

- 13.4.1 All pipe, fittings, and valves shall be thoroughly cleaned before being placed in the line. Before any section of line is placed in service it shall be sterilized. Two samples of water will be taken from the main twenty-four hours apart and will be examined at the WP UTILITIES, INC. laboratory with the results including both coliform and non-coliform growth. The Contractor shall

continue the sterilization until water in the line has been approved. After sterilization, the line shall be drained and thoroughly flushed. Sterilization by the contractor shall be accomplished in accordance with AWWA C651 or revisions thereof.

- 13.4.2 The Contractor will be required to test each section of line between valves at a pressure of 150 pounds per square inch or 1.5 times the operating pressure, whichever is greater. This pressure shall be maintained for not less than two hours or as much longer as the Engineer may require in order to detect any leakage or defective material. Any makeup water required shall be carefully measured and the leakage shall not exceed the requirement of AWWA C600 section 4 (latest revision). Any leaking or sweating joints shall be corrected. This specification is to be used for all types of pipe.

## SECTION 13.5 MEASUREMENT AND PAYMENT

### 13.5.1 WATER MAIN PIPE

- 13.5.1.1 Where cast iron pipe is laid, payment for water mains will be made on the basis of measurements taken prescribed, at the unit prices bid by the Contractor for "Cast Iron Pipe." This price shall include all labor, equipment, and materials (not including fittings, specials, and valves) necessary for furnishing, installing, making connections to existing mains, backfilling, installing in existing casings, testing, sterilizing, and all other work incident to the complete installation of these mains in accordance with these specifications.

- 13.5.1.2 Where reinforced concrete pipe is laid, payment for water mains will be made on the basis of measurements taken as prescribed, at the unit price bid by the Contractor for "Reinforced Concrete Water Pipe Steel Cylinder Type, Prestressed." This price shall include all labor, equipment, and materials, including fittings and specials. Necessary for furnishing, installing, making connections to existing mains, installing in existing casings, backfilling, testing, sterilizing, and all other work incident to the complete installation of these mains in accordance with these specifications but not including valves. No special measurement or payment will be made for fittings, specials, or pipe used in making connections to existing mains where such connections are noted on plans.

### 13.5.2 MEASUREMENT OF WATER MAINS

Measurement for payment for water mains will be taken along the centerline of the mains and will include all fittings and valves encountered in making these measurements. Measurements will be made through casings and payment will be made as specified herein.

### 13.5.3 CAST IRON FITTINGS

13.5.3.1 Measurement and payment for cast iron fittings and specials will not be made where such items are fabricated into reinforced concrete water pipe.

13.5.3.2 Cast iron fittings and specials, used in conjunction with cast iron pipe will be measured per each and paid for at the unit price bid by the Contractor for "Cast Iron Fittings". This price shall include all labor and equipment and all materials, necessary for installing, making connections to existing mains, backfilling, testing, sterilizing and all other work incident to the complete installation of these cast iron fittings in accordance with these specifications.

#### 13.5.4 VALVE WITH BOX

Valves with necessary boxes will be measured per each and will be paid for at the unit price bid by the Contractor for "Valve with Box" of the sizes installed. This price shall include all material, labor, and equipment necessary for installing, furnishing, backfilling, testing, sterilizing and all other work incident to the complete installation of these valves, with necessary boxes, in accordance with these specifications.

#### 13.5.5 FIRE HYDRANTS

Fire hydrants will be measured per each and will be paid for at the unit price bid by the Contractor for "fire hydrants". This price shall include all labor and equipment and all materials including extensions and fittings necessary for hydrant installation. Blocking, valves, and pipe will be paid for separately.

#### 13.5.6 TAPPING TEES AND VALVES

Tapping tees and valves will be measured per each and paid for at the unit price bid by the Contractor for "Tapping Tee and Valve", of the sizes installed. This price shall include all labor and equipment and all materials, (except concrete blocking) incident to making the taps and the complete installation of the tees and valves. It is understood that the price bid by the Contractor on this item includes both tapping tees and valves and no additional allowance will be made for either the tee or the valve.

#### 13.5.7 CONCRETE THRUST BLOCKS, ANCHORS AND PIERS

This work will be paid for at the unit price bid by the Contractor for Concrete Thrust Block, Anchors, and Piers, which price shall include all material, labor, and equipment necessary for furnishing, excavating, forming, installing, backfilling, and all other work incident to the complete installation of the concrete blocks, anchors, and piers in accordance with these specifications and details shown on the plans. Payment will be made to neat lines of construction shown on the plans, no allowance being made for extra ditch width.

#### 13.5.8 CONNECTING TO EXISTING MAINS

13.5.8.1 There shall be no payment for connecting to the existing mains. Cast iron fittings and specials used in making the connections will be measured and

paid for at the unit price bid by the Contractor for "Cast Iron Fittings" and at the unit bid price for "Tapping Tee and Valve".

- 13.5.8.2 No additional compensation will be paid for any reinforced concrete water pipe fittings used in making connection to cast iron mains.

#### 13.5.9 TESTING AND STERILIZING

The work and materials involved in testing and sterilizing the water mains will not be paid for directly, the cost of which shall be included in other bid items.

#### 13.5.10 REMOVE AND REPLACE PAVING (See Standard Detail WC#2 and 2A)

- 13.5.10.1 Where pavement is encountered as shown on the plans, the work will be paid for at the unit bid price per lineal foot for "Remove and Replace Pavement" and shall be measured along the centerline of construction. Extra width will not be measured for payment.

- 13.5.10.2 The unit bid price for this item includes all labor, tools, equipment and materials necessary to complete the work. The unit bid price shall also include the cost of using flowable fill as backfill material and/or compaction to 95% maximum density as determined by AASHTO T-99 procedures. An approved laboratory shall certify all compaction testing. The unit bid price shall also include the cost of removing all paving materials, which are not suitable for backfilling the trench from the job. There will be no extra payment for any of the above work, the cost of which shall be included in the unit bid price for "Remove and Replace Paving".

#### 13.5.11 REMOVE AND REPLACE ASPHALT DRIVE AND REMOVE AND REPLACE CONCRETE DRIVE

- 13.5.11.1 This work will be paid for at the unit bid price per lineal foot for "Remove and Replace Asphalt Drive" or "Remove and Replace Concrete Drive". Measurement for payment will be along the centerline of construction. Extra width will not be measured for payment.

- 13.5.11.2 The unit price bid for this item shall include all labor, tools, equipment and materials necessary to accomplish the work and shall include the cost of removing all paving materials, which are not suitable for backfill in the trench from the job. This work shall be completed within three days after the initial cutting.

#### 13.5.12 RESURFACE EXISTING PAVEMENT

Payment for "Resurface Existing Pavement" will be made at the unit bid price per square yard in accordance with field measurements of area made by WP UTILITIES, INC. The Contractor shall furnish the Engineer all asphalt weight tickets at the time the work is accomplished. The computed yield, arrived at by dividing the weight of asphalt used by

the measured area shall be a minimum of 200 pounds per square yard. In those areas where the work is acceptable to the South Carolina Department of Transportation and WP UTILITIES, INC., yet the computed yield is less than 200 pounds per square yard, payment will be made for the item in direct ratio of the square of the actual yield to the square of 200 pounds per square yard.

#### 13.5.12 PORTLAND CONCRETE CEMENT SIDEWALK

Concrete sidewalk shall be measured for payment based on the amount of sidewalk ordered removed and replaced by the WP UTILITIES, INC. The width used for computing quantities shall be the actual width of the sidewalk unless specified otherwise by WP UTILITIES, INC. The unit price per square foot for this item will be complete payment.

#### 13.5.14 AIR RELEASE VALVES

13.5.14.1 Air release valves will be measured per each and be paid for at the unit price bid by the contractor for "Air Release Valve". This payment shall include all labor and equipment and all materials incident to installation of the air release valves, including the corporation stop, curb stop and cast iron meter box.

13.5.14.2 The type K copper tubing shall be paid for at the unit bid price per lineal foot for "copper tubing". Measurement for payment will be from the water main through all fittings to the air release valve along the centerline of the copper tubing. This payment shall include all labor and equipment and all materials incident to installation of the copper tubing.

#### 13.5.15 STEEL CASING PIPE

The payable boring footage will be the distance shown on the plans or as specified by the Engineer. The unit bid price per lineal foot of "Steel Casing Pipe" shall include all labor, materials, tools, and equipment necessary to install the casing.

#### 13.5.16 ROCK EXCAVATION

13.5.16.1 Where Rock Excavation is to be measured for payment, the Engineer will determine quantities. Rock required to be removed shall be computed by the cubic yard. Dimensions for any purposes shall be the difference in elevation between the top and bottom of the rock as determined by the Engineer and the specified ditch width for the pipe size being laid. Where rock is encountered in the bottom of the trench, the maximum depth for payment purpose will be six (6) inches below the bottom of the pipe.

13.5.16.2 Payment shall be made at the contract unit price per cubic yard for Rock Excavation. These prices shall be full compensation for furnishing all materials, for all preparation and excavation of rock, for backfilling the excavated trench to the bottom of the pipe with selected backfill material

(GS-30, Item 71.0) and for all labor, equipment, tools and incidentals necessary to complete the item.

13.5.17 CONCRETE ENCASEMENT

13.5.17.1 Measurement shall be made along the centerline of the pipe and the pay quantity shall be determined from Standard Detail WC#8 attached.

13.5.17.2 Payment for furnishing concrete encasement will be at the unit price per cubic yard for the class of concrete stated in the proposal, such price to be paid in addition to that paid per foot of water main. The unit price stated in the proposal shall include the cost of additional depth of excavation, the furnishing and placing of concrete and laying of pipe to line and grade on bricks.

## Article 14.

### SANITARY SEWERS

#### SECTION 14.1      GENERAL

Construction detail drawings SSC # 1 through SSC # 7, SSC # 12 through SSC # 20 attached hereto are a part of these specifications. No project will be constructed that does not comply with Article 3, Design of Sanitary Sewers.

- 14.1.1      These specifications cover materials and procedures for the complete installation of certain sanitary sewers and appurtenances incident to the construction of extensions to be connected to WP UTILITIES, INC. Sewerage System. All construction, repair and replacement of sanitary sewer mains, service connections and appurtenances shall be carried out in accordance with these standard specifications, General Specifications, any Special Provisions, and in conformity with the line and grade as shown on the plans.
- 14.1.2      Pipe and appurtenances shall be installed at the locations shown on the plans and to the position, alignment and grade shown thereon, or in the event of grade conflicts, as directed by WP UTILITIES, INC. The Contractor shall erect, mark and maintain suitable barricades to protect the work and maintain public safety.
- 14.1.3      All pipe, special castings and fittings for sanitary sewer construction shall be furnished in accordance with specifications as outlined herein and in the Special Provisions and proposal form.
- 14.1.4      Sewer Pipe - Pipe for sanitary sewers shall be vitrified clay, lined reinforced concrete, SDR polyvinyl chloride (PVC) pipe, or, where indicated, cast iron pipe. All pipe shall be first quality, with smooth interior and exterior surfaces, free from cracks, blisters, honeycombs and other imperfections, and true to theoretical shapes and forms throughout the full length. All pipes shall be subject to inspection by the Engineer at the pipe plant, trench, or other point of delivery, for the purpose of culling and rejecting pipe, independent of laboratory tests, which do not conform to the requirements of these specifications. The Engineer shall mark such pipe and the Contractor shall remove it from the project site upon notice being received of its rejection. An independent laboratory, approved by WP UTILITIES, INC., in accordance with applicable specifications, shall test all sewer pipes. Character of tests shall be as follows:
  - (1)      Vitrified Clay Pipe: As required by ASTM C301-72 and ASTM C700-73T.
  - (2)      Reinforced Concrete Pipe: As required by ASTM C497-67 and Section 3, Paragraph 2 of ASTM C76-66T.

- (3) Cast Iron Pipe: As required by ANSI A21.6, latest revision.
  - (4) SDR Polyvinyl Chloride (PVC) Pipe: As required by ANSI/ASTM D 3034-78.
- 14.1.5 Water used for construction and testing will be furnished by WP UTILITIES, INC. through approved connections to its water system. Check valves to reduce possibility of contamination will be furnished by the contractor when directed by the WP UTILITIES, INC.
- 14.1.6 All materials furnished by the Contractor shall be delivered and distributed at the site by the Contractor. The Contractor at points designated by WP UTILITIES, INC. and hauled to the distribution site shall pick up materials furnished by the owner.
- 14.1.7 Sewer pipe and appurtenances shall be loaded and unloaded by lifting with hoists or skidding so as to avoid shock or damage. Under no circumstances shall such materials be dropped. Pipe handled on skid ways shall not be skidded or rolled against pipe already on the ground.
- 14.1.8 In distributing the material at the site of the work, each piece shall be unloaded opposite or near the place where it is to be laid in the trench.
- 14.1.9 Pipe shall be so handled that the coating and lining will not be damaged. If, however, any part of the coating or lining is damaged, the repair shall be made by the Contractor, at his expense in a manner satisfactory to WP UTILITIES, INC.
- 14.1.10 Affidavit of Compliance - The manufacturer shall furnish an affidavit that all material delivered does comply with the requirements of these specifications.
- 14.1.11 The Contractor shall proceed with caution in the excavation and preparation of the trench so that the exact location of underground structures, both known and unknown, may be determined. He shall be held responsible for the repair of such structures when broken or otherwise damaged.
- 14.1.12 All pipes shall be laid to the depth shown on the contract drawings. Any variation therefrom shall be made only at the order of WP UTILITIES, INC.
- (1) Minimum depth of cover for any sanitary sewer main between manholes shall be three feet unless encasement and/or iron pipe is used.
  - (2) Minimum distance from the top of ring to top of pipe for manholes shall be four feet for four feet diameter manholes. Larger diameter manholes shall be proportionately deeper.
  - (3) Depths less than specified above require special approval by the Engineer. It shall be incumbent upon the Contractor to determine if such



approval has been granted. Work not meeting this specification shall be removed and replaced properly at no expense to WP UTILITIES, INC.

- 14.1.13 Ledge rock, boulders, and large stones shall be removed to provide a clearance of at least six inches below and on each side of all pipe, and fittings. The specified minimum clearance is the minimum clear distance that will be permitted between any part of the pipe and appurtenance being laid and any part, projection, or point of rock, boulder, or stone.
- 14.1.14 The trench shall be dug so that the pipe can be laid to the alignment and depth required. The trench shall be so braced and drained that the workmen may work in it safely and efficiently. It is essential that the discharge of trench dewatering pumps be conducted to natural drainage channels, drains, or storm sewers. The length of trench excavated in advance of the pipe laying, shall be kept to a minimum, and in no case shall it exceed three hundred (300) feet unless specifically authorized by the Engineer. In no case shall two consecutive-intersections be closed to traffic due to uncompleted work. Each intersection must be opened to traffic before closing of the next one.
- 14.1.15 The width of the trench shall be ample to permit the pipe to be laid and joined properly, and the backfill to be placed and compacted as specified. Trenches shall be of such extra width, when required, as will permit the convenient placing of timber supports, sheeting and bracing, and handling of specials. No extra payment will be allowed for this work, the cost of which will be included in the Contractor's unit bid prices.
- 14.1.16 Construction in Easements -- In easements across private property, the Contractor shall confine all operations to the easement area and shall be responsible and liable for all damage outside of the easement area. Trees, fences, shrubbery or other type of surface improvements located in easements shall be protected during construction. The provisions above shall apply to all easement areas as well as to public rights-of-way. Adequate sheeting or other approved method to prevent any cave in or disturbance beyond the easement limits or damage shall take precautions to improvements within the easement. In general, the easement area is intended to provide reasonable access and working area for efficient operations to be performed within the restrictions shown on the plans. The Contractor shall be responsible for organizing his operations to perform within the restrictions shown on the plans. When requested, the owner shall make available to the bidders and furnish to the Contractor a copy of the construction easements. (See General Specifications).
- 14.1.17 Barricades, Guards and Safety Provisions - To protect persons from injury and to avoid property damage, adequate barricades, construction signs, torches, lanterns and guards as required shall be placed and maintained by the Contractor at his expense during the progress of the construction. All material piles, equipment and pipe which may serve as obstructions to traffic shall be enclosed by fences or barricades and shall be protected by proper lights when the visibility is poor. The rules and regulations of O.S.H.A and Appropriate

authorities respecting safety provisions shall be observed. (See General Specifications).

- 14.1.18 Protection of Property and Surface Structures - Trees, shrubbery, fences, poles and all other property and surface structures shall be protected during construction operations unless their removal is authorized by the Engineer. Any fences, poles or other manmade surface improvements, which are moved or disturbed by the Contractor, shall be restored to their original condition, after construction is completed, at the Contractor's expense. The Contractor shall remove any trees, shrubbery or other vegetation, which are approved or ordered for removal by the Engineer, completely, including stumps and roots. Responsibility for any damage or claims for damage caused by construction operations to shrubbery or other landscape improvements, which were not authorized for removal by the Engineer, shall be assumed by the Contractor.

## SECTION 14.2 CONSTRUCTION MATERIALS

- 14.2.1 Ductile Iron Pipe - Ductile iron pipe shall be manufactured in accordance with ANSI specification A 21.51 (AWWA C151) of latest revision. Joints shall be Bell and Spigot, Push-on (Glam organ Tyton, American Fastite, Clow Bell-Tite, or equivalent), or mechanical; unless otherwise called for on the proposal form. Pipe will be seal-coated in accordance with ANSI specification A 21.4 (AWWA C104) of latest revision.

- 14.2.2 Vitrified Clay Pipe - All vitrified clay pipe and fittings shall be either salt glazed extra strength, or unglazed extra strength, conforming in all respects to the specifications of ASTM, Serial Designation C 278-60T, or latest revision, except as otherwise provided herein. Absorption shall not exceed six (6) percent when determined in accordance with ASTM Specification, Serial Designation 301-65T, or latest revision.

- (1) Vitrified clay pipe joints shall be Bell and Spigot and shall be furnished with gasket-type jointing connections conforming to the specification of ASTM, Serial Designation C425-66T, Type III, or latest revision. Pipe 12 inches and smaller in diameter shall be furnished in minimum lengths of 4 feet. Pipe 15 inches and larger in diameter shall be in minimum lengths of 5 feet.
- (2) Vitrified clay pipe with Glas-Lok joints may be used as an alternate. The pipe shall be plain end pipe conforming to dimensional and strength requirement of ASTM C-700, or latest revision. The spigot shall consist of semi-rigid polyester casting and a high quality "O" ring. The coupling shall be a glass filament member helically wound on the pipe so as to form a mechanical and chemical bond to the pipe. The joint shall comply with the performance requirements of ASTM C-425 or equal to Pomona Glas-Lok.

- 14.2.3 Concrete Pipe - All concrete pipe and fittings in sizes from 6 inches through 15 inches shall conform to ASTM Specifications, Serial Designation C14-65

for extra strength. All concrete pipes larger than 15 inches in diameter shall be reinforced concrete pipe, conforming to ASTM Specifications, Serial Designation C76-66T, Class III, and wall thickness.

- (1) Pipe shall be Bell and Spigot and shall be furnished with gasket-type jointing connection conforming to ASTM Specifications, Serial Designation C443-65T, or latest revision.
- (2) All concrete pipes shall be lined at the point of manufacture with an inert material, as hereafter specified, which will adhere tightly and permanently to the concrete and will provide protection against injurious waste and gases. The entire surfaces of the pipe, including spigot ends, bell seats and other surfaces subject to contact with waste or gases shall be coated and protected to the satisfaction of the Engineer.
- (3) Reinforced Concrete Pipe - All reinforced concrete pipe shall be lined pipe conforming to the requirements of ASTM Specifications, Serial Designation C76-66T, or latest revision for Class III, IV or V concrete pipe as required for the maximum trench depth, specified hereafter. All pipes shall be manufactured using Type I cement and crushed granite aggregate. Pipe shall be furnished in minimum length of eight (8) feet with "B" wall thickness.
- (4) Joint Couplings - Concrete pipe shall be furnished with "O" ring gasket type joints, conforming to ASTM Specifications, Serial Designation C443-65, or latest revision. Pipe ends shall be Bell-and Spigot, utilizing a rubber gasket as the sole element to seal the joint. Joint assemblies may be steel bell and spigot rings, or all concrete bell and spigot joints. A rectangular groove shall be so formed and accurately manufactured as to provide a close sliding fit with the gasket confined on all sides. The gasket shall be a rubber "O" ring gasket conforming to all gasket requirements of ASTM Specifications, Serial Designation C448-65, or latest revision.
- (5) Lining - All concrete sewer pipe shall be lined with an epoxy resin lining or a composite lining. The lining shall be in accordance with one of the following methods. The base bid unit prices as stated in the proposal shall be for epoxy resin lining. Alternate bid unit prices, as stated in the proposal, shall be for the composite lining. Persons thoroughly skilled in the application procedure shall apply either lining in accordance with the manufacturer's recommendations.
- (6) Epoxy Resin Lining - All concrete sewer pipe surfaces to receive lining (coating) material shall be thoroughly sand blasted to remove all loose concrete, laitance and all other surface contaminants. Surfaces shall be clean and dry for application of the coating. The lining material shall be a modified epoxy resin similar to Induron Epoxy, manufactured by Industrial Paint Manufacturing Company, PRS No. 50, as manufactured by Products Research Sewers, Inc. or Royston Roypex 309 as

manufactured by Royston Laboratories, Inc.; Pittsburgh, Pennsylvania, or an approved equal. The entire inner surface of the pipe barrel shall be coated, including the end and exterior surfaces of the spigot end and the base of the socket and interior mating surfaces of the bell-end. The coating shall be applied in the following manner: A wash coat consisting of a 3:1 to 5:1 solvent-to-pigment mixture shall be applied as recommended by the coating manufacturer. The coating shall be applied in a minimum of three coating operation to achieve a minimum total dry thickness of 20 mils. At least 24 hours drying and curing time shall be allowed between each successive coat. Application of the coating shall be by airless spray. All coated pipe shall be allowed to dry and cure at least seven days after application of the third coat before it is delivered to the project site.

- (7) Composite Lining - A coal tar resin vehicle with selected siliceous aggregates shall be applied to the inner surface of the pipe barrel. The lining material shall be "Mainstay" as produced by the Pittsburgh Chemical Company, a division of the United States Steel Company, or an approved equal material. The lining material shall be applied directly to the uncured concrete surface with the method the pipe manufacture will permit, i.e., packer head, tamper, etc. When the method of pipe manufacturer precludes the above, the lining material may be applied to cured surfaces, which have been thoroughly, sand blasted and then coated with a compatible wetting agent. The lining shall be applied by hydraulically extruded centrifugal process to a minimum thickness of 90 mils, for the full length of the barrel. Joint surfaces shall be coated with the same material.
- (8) Inspection - The completed pipe linings under either system specified above shall be checked for surface continuity by means of approved holiday detectors. Pipe shall be visually inspected just prior to laying to determine that the lined surfaces of the pipe have not been damaged.
- (9) Guarantee - The concrete pipe manufacturer shall furnish to WP UTILITIES, INC. a written guarantee to the effect that he will furnish all labor and materials to repair and/or replace promptly the protective coating, lining or composite lining, in part or in whole, due to damage or failure because of lack of chemical resistance to the sewage atmosphere or lack of bond to the concrete pipe. Should the. Protective coating fail, the materials for repair or replacement shall be subject to the approval of the Engineer. This guarantee shall be in effect for a period of five (5) years, beginning on the date of completion of the contract.

14.2.4 Cast Iron Soil Pipe - All cast iron soil pipe will conform to Commercial Standard CS188-59 or any later revision.

- (1) Flexible Compression, Factory Fabricated Joints - When pipe is joined by means of flexible compression joints, such joints shall conform to approved standard and shall not be considered as slip joints.

14.2.5 SDR Polyvinyl Chloride (PVC) Pipe - PVC pipe and fittings must meet ANSI/ASTM D 3034-78 and shall be installed in accordance with ANSI/ASTM D 2321-74. Only Class I, II and III embedment materials, as defined in paragraph 6 and figure 1 may be used in bedding, hunching and initial backfill.

14.2.6 Asbestos - Cement Pipe - Asbestos cement pipe is not approved for construction of sanitary sewers.

14.2.7 Steel Pipe (Casing) - Steel casing pipe for underground installation by dry bore and jacking shall be manufactured in accordance with ANSI Specification A 53 or latest revision. The steel casing pipe shall be Type S, Grade B; plain end beveled steel contained i3 USA Standard USAS B36 or latest revision. All steel casing pipes shall be furnished in 20 feet lengths, all joints welled. The minimum wall thickness shall be as follows:

Nominal Diameter (inches)	Nominal Thickness (inches)
Under 14	0.188
14 and 16	0.219
18	0.250
20	0.281
22	0.312
24	0.344
26	0.375
28 and 30	0.406
32	0.469
38, 40 and 42	0.500

- (1) Steel casing pipe shall have minimum yield strength of 35,000 psi.
- (2) When casing pipe is installed without a protective coating and is not catholically protected, the wall thickness shown above shall be increased to the next standard size.

14.2.8 Brick - Common brick shall conform to the specifications of the ASTM, Serial Designation C62, or latest revision.

- (1) Portland Cement concrete brick shall conform to the specifications of the ASTM. Serial Designation C55-71 for grade "N" brick, or latest revision.
- (2) Brick for manholes shall be grade "MS" or equal and shall conform to ASTM C32.

14.2.9 Manhole Ring and Cover-- All manhole rings and covers shall have bearing surfaces ground so that the covers will fit solidly in all positions and insure a tight fit. Manhole castings shall be gray iron castings, conforming to ASTM Specifications, Serial Designation A48-2, Class 30B.

- (1) Watertight Manhole Frame and Cover - Where watertight frame and cover are required, castings for cover and frame shall be as follows:

Castings approved for use inside the traveled way:

<u>Neenah Foundry Co.</u>	<u>Sumter Machinery Co.</u>	<u>Davis Meter &amp; Supply Co.</u>
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R-1916-3 430#	MF and MC-40-B 345#	D-7045 460#
R-1916-F 370#		
R-1915-B 335#		

- (2) Castings approved for use outside the traveled way:

Sumter Machinery Co.

MF and MC-1342BD, 256#  
MF-15 and MC-18, 300#

In addition, those itemized for use inside the traveled way may be used outside the traveled way.

- (3) Standard Frame and Cover - Where watertight frame and cover are not required, castings for cover and frame shall be as follows:

Castings approved for use inside the traveled way:

<u>Neenah Foundry Co.</u>	<u>Dewey Brothers, Inc.</u>	<u>Sumter Machinery Co.</u>	<u>Davis Meter and Supply Co.</u>
R-1643, 350#	RCR-1, 328#	MF-MC-68L, 390#	D-330, 330#
R-1657, 350#	RCR-36, 355#	MF-955 and MC-12, 350#	D-8067, 340#
R-1726A, 350#		MF-804 and MC-68, 363#	D-7007, 340#
R-1773A, 350#	RCR-66, 355#	MF-11 and MC-18, 328#	
R-1764, 345#	RCR-137, 350#	MF and MC-1342H, 334#	
R-1670, 350#	RCR-130, 371#	MF-1 and MC-2, 333#	
	RCR-136, 376#		

Castings approved for use outside the traveled way:

<u>Neenah Foundry Co.</u>	<u>Dewey Brothers, Inc.</u>	<u>Sumter Machinery Co.</u>	<u>Davis Meter and Supply Co.</u>
R-1648, 320#	RCR-2001, 310#	MF and MC-310, 305#	D-290, 290#
R-1688, 280#	RCR-66A-290#	MF and MC-1342, 256#	D-7003, 300#
R-1695, 270#		ME-16 and MC-18, 260#	D-7005, 320#
R-1754A, 310#		MF and MC-72, 308#	D-8070, 300#
R-1773, 300#		MF-15 and MC-18, 300#	
R-1786, 300#		MF and MC-450, 320#	,

In addition, those listed for use inside the traveled way may be used outside the traveled way.

- (4) Additional castings will be reviewed for approval upon request.
- (5) Steps-- Steps shall be designed for the installation of a whole brick into the back section for securely holding the step into the wall. Step shall be approximately five inches. Minimum weight shall be 10 pounds. Steps shall be similar to Sumter Machinery Company's MH-Step No. 1, or Dewey Brothers MH-ST 7.

14.2.10 Drop Manholes - Where the free drop in manholes exceeds two feet, measured from the invert of the inlet sewer to the invert of the outlet sewer, the Contractor shall construct drop manholes in accordance with detailed plans. Materials and workmanship shall be in accordance with the General Specifications.

14.2.11 Precast Concrete Manhole Sections - Precast concrete sections, if used, shall conform to the ASTM Tentative Specifications for Precast Reinforced Concrete Manhole Risers and Tops, Designation C478, with the following exceptions and additional requirements. All precast concrete sections shall be lined as specified herein before for concrete pipe.

- (1) Type II cement shall be used except as otherwise approved.
- (2) Manhole steps are specified under Item 13.2.9(5). Steps shall be cast into the section as it is made.
- (3) Sections shall be steam cured and shall not be shipped until at least five days after having been cast.
- (4) Minimum wall thickness shall be five (5) inches.
- (5) Acceptance of the sections will be on the basis of material tests and inspection of the completed product.
- (6) Domes shall be of the eccentric type.

- (7) Joints in riser sections shall be gasket type conforming to ASTM Designation C361 series, or others approved by the Engineer.
- (8) No more than two lift holes may be cast or drilled in each section.
- (9) The date of manufacture and the name or trademark of manufacturer shall be clearly marked on the inside of the barrel.

14.2.12 Portland Cement Concrete - Portland cement concrete for structures shall conform to Section 701 of the SCDOT Standard Specifications for Highway Construction, latest edition.

- (1) The 28-day compressive strength of concrete shall not be less than 3000 psi, which shall be demonstrated by standard compressive tests. Each test shall consist of duplicate cylinders and not less than one test shall be made for each 50 cubic yards. One cylinder of each pair shall be tested after seven days and shall have a compressive strength of not less than 2000 psi.
- (2) Concrete shall contain not less than six sacks of cement per cubic yard and not more than six gallons of water per sack of cement, including water contained in aggregate.

14.2.13 Concrete and Masonry Mortar - This section includes all concrete work required, of every description, shown or specified, including pavements, bedding concrete, thrust blocks, etc.

- (1) All materials incorporated shall conform to the SCDOT Standard Specifications for Highway Construction, latest edition.

14.2.14 Reinforcing Steel - Reinforcing steel shall be of new billet steel intermediate grade made by the open-hearth process, conforming to the requirements of the "Standard Specifications for Billet Steel Concrete Reinforcement Bars", Serial Designation C15-33 of the ASTM Designation A615-68. Bars must be deformed in rolling, and the design of the deformation shall be in accordance with ASTM designation A615-68. In addition to the reinforcing indicated on the plans, the Contractor shall furnish all necessary support bars, tie bars, etc., required for properly supporting and spacing the bars in the forms. The reinforcement will be subject to field inspection for rust, shape and dimensions.

- (1) Wire mesh used as reinforcement shall be of the size and spacing shown on the plans. The wire mesh shall comply with ASTM-A-185.

14.2.15 Fencing - See Standard Fencing Specifications.



- 14.2.16 Paving Materials - Sub base, base and surfacing materials used for replacing existing pavements or constructing new pavements shall conform to the SCDOT Standard Specifications for Highway Construction, latest edition.
- 14.2.17 Portland Cement Mortar - Portland Cement Mortar shall consist of Portland cement, fine aggregate and water.
- 14.2.18 Ingredients - All materials for mortar shall conform to requirements of the SCDOT Standard Specifications where applicable and the following specifications:
- (1) Portland Cement - ASTM Designation C 150, Section 501, Concrete Materials.
  - (2) Sand - 501.04 Fine Aggregate; Section 501, Concrete Materials.
  - (3) Water - 501.06 Water; Section 501, Concrete Materials.
- 14.2.19 All equipment, tools and machinery used in mixing and handling mortar shall be approved by WP UTILITIES, INC.
- 14.2.20 Composition --The proportions of Portland cement, fine aggregate and water shall be such as to produce a plastic mortar. The workability shall be consistent with the type of work for which it is used in order to secure the best results.
- (1) The mortar as specified for the several types of work, shall be proportioned one part cement and three parts by volume fine aggregate.
  - (2) Proportioning of batches shall be by volume unless otherwise shown on the plans or specified in the Special Provisions. One sack of cement weighing ninety four (94) pounds shall be considered on (1) cubic foot. Correction for bulking of the fine aggregate shall be made as directed by WP UTILITIES, INC.
- 14.2.21 Admixture
- (1) Lime - Lime which has been thoroughly air slaked may be added, up to ten (10) percent of the cement content of the mix to increase the workability of the mortar, upon approval of or direction of the Engineer. Lime shall conform to ASTM Specifications, Designation C 141.
  - (2) Commercial Admixtures - Commercial admixtures to increase the workability of mortar or concrete will not be used unless specifically approved in writing by the Engineer.
- 14.2.22 All other materials, not herein specified shall conform to applicable sections of SCDOT Standard Specifications for Highway Construction, latest edition.

## SECTION 14.3      CONSTRUCTION METHODS

- 14.3.1      Order of Construction - The construction of all sewers shall begin at the low point in the line in every case working toward the high point. Each section of sewer pipe shall be specified to be laid to the appropriate line and grade, as designed, working in the upstream direction with the bell end laid upgrade.
- 14.3.2      Excavation in Advance of Construction - The amount of trench excavated approximately to grade shall not exceed one hundred fifty (150) feet, and no trench excavation whatever shall be made farther than three hundred (300) feet in advance of sewer construction, unless specifically authorized by WP UTILITIES, INC.
- 14.3.3      Use of Explosives - Should the Contractor elect to use explosives to loosen rock or for any other purposes in the prosecution of the work, he shall obtain the required permits and the written permission of WP UTILITIES, INC. The City Fire Chief and Police Chief shall be notified. If construction is outside the City Limits, the Contractor shall be responsible for determining whether a County permit is required and for obtaining any permit so required. The Contractor shall be responsible for and shall make good any damage caused by blasting or accidental explosions. All necessary precautions shall be taken by the Contractor as required by Federal and State laws, County regulations, if applicable, City regulations, the Standard Fire Prevention Code and O.S.H.A. Rules and Regulations. (See General Specifications.)
- (1)      The hours of blasting will be fixed by the Engineer. The Contractor at his expense shall repair any damage caused by blasting. The Contractor's methods and procedures in blasting shall conform to Federal and State laws, County regulations, if applicable, City regulations, the Standard Fire Prevention Code and O.S.H.A. Rules and Regulations. (See General Specifications.)
- 14.3.4      Delivery of Materials - Materials delivery shall be so scheduled by the Contractor to provide the least interference and inconvenience to the public.
- 14.3.5      Connections to Other Sewers or to Appurtenances - The connecting of Sewers or sewer appurtenances to other sewers or to sewer appurtenances shall be made in accordance with the plans, of under the direction of the Engineer. The work shall be done in a workmanlike manner in such a way as to prevent damage to any of the structures involved. No sewer shall project beyond the inside wall line of other sewer pipe, or of sewer appurtenances unless otherwise shown on the plans.
- (1)      Stoppers or Bulkheads - Dead ends of all sewers, wyes, etc. shall be closed with approved stoppers securely cemented in place. When shown on the plans or required by the Engineer, such openings shall be tightly walled up with brick masonry or concrete. Tight fitting stoppers or bulkheads shall be securely placed in or across the end of all sanitary sewer lines when construction is stopped at the end of each day's work

or for any other cause. When work is stopped temporarily on sanitary sewers, the end of the pipe shall be closed to prevent trash or debris from entering the pipe. Such stoppers need not be watertight.

- 14.3.6 Sewer Grades - The grade line shown on the plans is the elevation of the invert or flow line of the sewer. The grade line shall be established in the trench by the use of batter boards set at grade stakes not farther than fifty (50) feet apart. Not less than three (3) batter boards shall be maintained in correct position continuously during the construction of the sewer. Batter boards shall be of good, straight, sound material, fastened to substantial stakes or uprights. Batter boards ten (10) feet or less in length shall not be smaller than 1" x 4", and when longer than ten (10) feet shall not be smaller than 1" x 6" or 2" x 4". Stakes shall not be smaller than 2" x 4". Steel stakes may be used when approved by the Engineer. Suitable fine cord or wire shall be stretched tightly between batter boards over the exact centerline of the sewer. A graduated pole or rod shall be provided for measuring from the cord stretched between batter boards to the bottom of the trench while the trench is being prepared, and to the sewer invert while the sewer is being placed.

- (1) Laser Level - The use of a laser level to establish sewer grade and alignment is permitted as an alternate to the use of batter boards, at the contractors option.

- 14.3.7 Excavation and Backfill - Excavation and backfill shall include all excavation, backfilling, compacting, disposal of surplus material, restoration of all disturbed surfaces, and all other work incidental to the construction of trenches, including any additional excavation which may be required for manholes or other structures forming a part of the pipe line.

- (1) Surface Removal - Along the proposed pipe lines as indicated on the plans, the Contractor shall remove the surface materials only to such widths as will permit a trench to be excavated which will afford sufficient room for proper efficiency and proper construction. Where sidewalks, driveways, pavements and curb and gutter are encountered, care shall be taken to protect such against fracture or disturbance beyond reasonable working limits. In areas specified on the plans, the top twelve (12) inches shall be piled separately and preserved so that it may be restored after the remainder of the backfill is replaced.
- (2) Excavation by Hand or Machine - Where working space will permit, trenches may be excavated by machine, provides that by so doing, public and private improvements will not be subjected to an unreasonable amount of damage, otherwise hand excavation shall be employed.
- (3) Width of Excavation - The bottom width of the trench at and below the top of the pipe, and inside any sheeting and bracing used, shall not be less than the widths shown in the following tables:

- (a) When construction is under an unimproved surface the following table shows the minimum trench widths:

<u>Pipe Size</u>	<u>Width</u>	<u>Pipe Size</u>	<u>Width</u>	<u>Pipe Size</u>	<u>Width</u>
6"	2' 6"	27"	4' 3"	66"	9' 1"
8"	2' 6"	30"	4' 7"	72"	9' 8"
10"	2' 6"	33"	5' 4"	78"	10' 3"
12"	2' 8"	36"	5' 8"	84"	10' 10"
15"	2' 10"	42"	6' 3"	90"	11' 5"
18"	3' 2"	48"	6' 10"	96"	12' 0"
21"	3' 8"	54"	7' 11"	102"	12' 7"
24"	4' 0"	60"	8' 6"	108"	13' 2"

- (b) When construction is under an improved surface, the following table shows the minimum trench widths:

<u>Pipe Size</u>	<u>Width</u>	<u>Pipe Size</u>	<u>Width</u>	<u>Pipe Size</u>	<u>Width</u>
690	3' 0"	2711	4' 9"	6611	9' 7 1/2"
8"	3' 0"	30"	5' 0"	72"	10' 2"
10"	3' 0"	33"	5' 9"	78"	10' 9"
12"	3' 0"	36"	6' 1"	84"	11' 4"
15"	3' 0"	42"	6' 9"	90"	11' 7"
18"	3' 6"	48"	7' 4"	96"	12' 6"
21"	3' 9"	54"	7' 11"	102"	13' 1"
24"	4' 6"	60"	9' 0"	108"	13' 8"

- (4) The strength or class of pipe shall be as indicated on the plans or Special Provisions.
- (5) Trench sheeting and bracing or a trench shield shall be used when required by the rules and regulations of O.S.H.A. The bottom of the trench excavation shall conform to the details shown on the plan.
- (6) Excavation Below Grade - Where the excavation is carried beyond or below the lines and grades given by the Engineer, the Contractor shall, at his expense, refill all such excavated space with suitable material as approved by the Engineer.
- (7) Rock Excavation --Wherever "rock" is used as the name of an excavated material, it shall mean boulders or pieces of rock, concrete, or masonry measuring one half (1/2) cubic yard or more, hard shale, solid ledge rock, or masonry which, in the opinion of the Engineer, requires for its removal the continuous use of pneumatic tools or drilling and blasting. Where the proposal does not contain a pay item for ROCK EXCAVATION, the additional cost of rock removal as defined by these specifications shall be paid on extra work basis unless otherwise specified in the Special Provisions.

- (8) Before payment is allowed for rock excavation, the contractor shall be required to demonstrate the material cannot be removed "by hand pick" or by power operated excavator or shovel. No payment will be made for Rock Excavation unless the contractor used air tools or explosives. No payment will be made for rock excavation unless the Engineer approves such payment in writing prior to excavation.
- (9) Subsurface Exploration - All information available to WP UTILITIES, INC., if any, on subsurface conditions will be made available for examination by prospective bidders. However, it is understood and agreed that WP UTILITIES, INC. shall in no way be held responsible for interpretation of this information, its accuracy or its thoroughness. Prospective bidders shall make such subsurface explorations, as they believe necessary to verify and supplement information received from WP UTILITIES, INC.
- (10) Exploratory Excavation - Whenever, in the opinion of the Engineer, it is necessary to explore and excavate to determine the best line and grade for construction of the proposed pipeline, the Contractor shall make explorations and excavations for such purposes.
- (11) Braced and Sheeted Trenches - Open-cut trenches shall be sheeted and braced or otherwise protected as required by any governing Federal or State laws and municipal ordinances, and as may be necessary to protect life, property, or the work. In any event, the minimum protection shall conform to the recommendations in O.S.H.A. Safety and Health Standards for Construction. A sand box or trench shield may be used in lieu of sheeting when permitted by O.S.H.A. and approved by the Engineer. When close sheeting is used, it shall be so driven as to prevent adjacent soil from entering the trench either below or through such sheeting.
- (12) Where sheeting and bracing are used, the trench width shall be increased as directed by the Engineer. The Engineer may order the sheeting driven to the full depth of the trench or to such additional depth as may be required for the protection of the work. Where soil in the lower limits of the trench has the stability to meet the O.S.H.A. standards, the Engineer at his discretion may permit the Contractor to stop the driving of sheeting at such designated elevation above the trench bottom. The granting of permission by the Engineer, however, shall not relieve the Contractor in any degree from his full responsibility under the contract. Sheeting and bracing which have been ordered left in place shall be cut off at the elevation ordered by the Engineer. Trench bracing, except that ordered left in place, may be removed when the backfilling has reached the respective levels of such bracing. Sheeting, except that ordered left in place, may be removed after the backfilling has been completed or has been brought to an elevation that permits its safe removal.

- (13) Trenches With Sloping Sides, Limited - The Contractor may, at his option, where working conditions and rights-of-way permit (as determined by the Engineer), excavate pipe line trenches with sloping sides, but with the following limitations:
- (a) In general, only braced and vertical trenches will be permitted in traveled streets, alleys or narrow easements.
  - (b) Where trenches with sloping sides are permitted, the slopes shall not extend below the top of the sewer. Trench excavations below this point shall be made with vertical sides, with widths meeting those specified herein before for the various sizes of pipe.
- (14) Short Tunnels - In some instances, the proximity of trees, fire hydrants, sidewalks and other obstructions may be a hindrance to open-cut excavation. In such cases, the Contractor shall excavate by means of short tunnels in order to protect such obstructions against damage. Such short tunnel work shall be considered incidental to the construction of the pipeline and shall not be grounds for extra payment or payment for tunnel work. Where such obstructions are shown on the plan, payment will be made at the contract unit price or as extra work in accordance with Section 13.5.
- (15) Piling Excavated Material - All excavated material shall be piled in a manner that will not endanger the work and that will avoid obstructing sidewalks and driveways. Fire hydrants under pressure, valve pit covers, valve boxes, curb stop boxes, or other utility controls shall be left unobstructed and accessible. Gutters shall be kept clear or other satisfactory provisions made for street drainage. Natural watercourses shall not be obstructed.
- (16) Removal of Water - The Contractor shall at all times during construction provide and maintain ample means and devices with which to promptly remove and properly dispose of all water entering the excavations or other parts of the work until all work to be performed therein has been completed. No sanitary sewer shall be used for disposal of trench water, unless specifically approved by the Engineer and then only if the trench water does not ultimately arrive at existing pumping or sewage treatment facilities.
- (17) Structure Protection - Temporary support, adequate protection and maintenance of all underground and surface structures, drains, sewers and other obstructions encountered in the progress of the work shall be furnished by the Contractor at his expense and under the direction of the Engineer. The structures, which may have been disturbed, shall be restored upon completion of the work.
- (18) Deviations Occasioned by Other Structures or Utilities - Wherever obstructions are encountered during construction that require alteration

of a plan, the Engineer shall change the plans and order a deviation from the line and grade or arrange with the owners of the structures for the removal, relocation or reconstruction of the obstructions. Where gas, water, telephone, electrical, hot water, steam or other existing utilities are an impediment to the alignment of the proposed pipe line, the Engineer shall order a change in grade or alignment or shall arrange with the owners of the utilities for their removal. If a change in line or grade of a sanitary sewer is necessary, the Engineer will order the addition of any manholes needed. Cost of removal, modification and/or replacement of existing structures or utilities shall be borne by WP UTILITIES, INC.

- (19) Protection of Utilities - The Contractor shall proceed with caution in the excavation and preparation of the trench so that the exact location of underground structures may be determined. Prior to proceeding with trench excavation the Contractor shall contact all utility companies in the area to aid in locating their underground services.

- (a) The Contractor shall take all reasonable precautions against damage to existing utilities. However, in the event of a break in an existing water main, gas main, sewer or underground cable, he shall immediately notify the responsible official of the organization operating the utility interrupted. The Contractor shall lend all possible assistance in restoring services and shall assume all cost, charges or claims connected with the interruption and repair of such services if the owner thereof prior to excavation marked the location of said utility.

- (20) Backfill - Where granular or concrete cradle is used it shall extend to the spring line of the pipe. For pipe not requiring granular or concrete cradle, backfill to a point one foot above the top of the pipe shall be made with selected materials available from the trench excavation. Material placed in this zone shall be free from all rocks which are capable of damaging the pipe or its coating. The material shall be evenly and carefully placed and shall be hand tamped around the pipe.

- (a) Backfill material above the granular cradle to a point twelve (12) inches above the top of the pipe shall be placed in layers of six (6) inches thickness, loose measure, and each in such manner as not to disturb or injure the pipe. The balance of the backfill material shall be placed in uniform layers of twelve (12) inches thickness, loose measure, and each layer shall be compacted by ramming or tamping with tools approved by the Engineer. All compaction shall not be less than 95% standard proctor, for the soil.

- (b) Where called for on the plans, those areas where sewers are crossing open areas where early settlement is not critical, backfill from 12" from the top of the pipe to the surface, shall be made by any acceptable method, which will not dislodge or damage the pipe or cause bridging action in the trench. Only selected excavated material

free from clods or stones shall be used in backfilling up to twelve (12) inches above the top of the pipe. Water-soaking or other methods of trench settlement will not be required in this case. Excess material shall be neatly rounded over the top of the trench as directed by the Engineer to allow reshaping of the surface to level out any uneven settlement that may occur.

- (20) Selected Granular Backfill - Where called for on the plans, material conforming to this specification for selected granular backfill shall be placed and compacted in those locations shown on the plans. Where sewers, water mains, or other pipe conduits are constructed under permanent type pavements, driveways or sidewalks, selected granular backfill shall be used to fill the trench to the bottom of the permanent type surface to be reconstructed and shall be compacted by either water jetting or mechanical methods before the permanent surface is constructed.
- (21) Materials for selected granular backfill shall consist of sand, stone sand, crushed stone, pit run or crushed gravel, or crushed boiler slag well graded within the following limits. Selected granular backfill shall be reasonably free from an excess of soft and unsound particles and other objectionable matter.

(a) SELECTED GRANULAR BACKFILL

TYPE	SIEVE SIZE				PERCENT PASSING			
	1-1/2"	1"	1/2"	#4	#8	#16	#100	#200
A	100	90-100	60-100	40-80	25-60	20-45		0-15
B		100	60-95	40-60		15-45		5-15
C				80-100			0-40	
D			100	94-100		45-85	0-10	

- (b) Granular materials from local deposits, graded reasonably close to the limits specified above, and approved by the Engineer, may be used for selected granular backfill.
- (22) At the time of use, the selected granular backfill shall be free of frozen lumps and foreign materials that may have become mixed with it during handling.



- (23) Granular Cradle - Granular cradle shall be required only where indicated on the drawings or special provisions, or where ordered by the Engineer. Material for granular cradle shall be stone screenings, crushed stone, pit run gravel, washed gravel, crushed boiler slag or other granular material approved by the Engineer. Granular cradle shall be well graded within the limits stated below and shall be free from excess of soft or unsound particles or other objectionable matter. The type of granular cradle to be used in specific location will be designated by the Engineer.
- (24) For reasonably good non-granular foundation conditions, Type A, or Type C granular cradle will be designated. Where, in the opinion of the Engineer, the foundation conditions are not suitable for use of one of the above types of granular cradle then Type B granular cradle or concrete cradle may be used. The actual selection is to be made by the Engineer. Granular cradle shall be allowed for separate payment only in the locations where the use of these items is specified or ordered by the Engineer. A change in type of cradle material shall not be made unless a minimum of two (2) cubic yards of material is allowed for payment.

(a) GRANULAR CRADLE GRADATIONS

TYPE	Sieve Size				Percent Passing		
	1-1/2"	1"	1/2"	#4	#8	#16	#200
A	100	90-100	60-100	40-80	25-60	20-45	0-15
B	100	60-95				10-30	0-2
C	100	60-95	40-60			15-45	5-15

- (b) Granular materials, from local deposits, graded reasonably close to the limits specified above and approved by the Engineer for use as granular cradle may be used.
- (25) Where the natural foundation soil, on which sewer pipes are to be bedded, consists of material suitable in its natural state for shaping and bedding a sewer, no granular cradle will be required. Where granular cradle is not required, the trench ahead of the pipe shall not be excavated below a plane one-twelfth (1/12) the inside diameter of the pipe above the flow line of the sewer. The pipe layer shall excavate the remainder of the trench to conform to the outside of the bottom of the pipe in order that the barrel of the pipe will have a bearing of not less than one-fourth (1/4) of its circumference and for not less than three-fourths (3/4) of its

length. Hellholes shall be dug for bell and socket around the pipe from the outside. Under no condition shall they be so shallow that the pipe will be supported by the bell. After the joint is made, the bell hole shall be carefully filled with sand, fine earth or clay without tamping.

- (26) Unsuitable Soil - When soil conditions require the removal of unsuitable materials below the depth of the bedding shown on the plan, the Contractor shall replace the material removed with granular cradle of the grade approved by the Engineer.
- (27) Concrete Cradle - Where sub grade conditions, in the opinion of the Engineer, warrant extra precautions for the bedding of pipe the Engineer may order the construction of a concrete cradle in conformance with the size and dimensions indicated on standard detail SSC-4. All concrete used in concrete cradles shall have a minimum compressive strength of twenty-five hundred (2,500) psi at twenty eight (28) days.
- (28) Compacting Backfill - When called for on the plans, jetting shall compact trench backfill and water-soaking in the manner described below. The trench compaction shall be started at the point of lowest elevation of the trench and worked up along the trench. Jetting and water-soaking shall not begin until the trench has been backfilled to within six (6) inches of the finished surface.
  - (a) Jet Holes - The holes through which water is injected into the backfill shall be centered over the trench backfill and at longitudinal intervals of not more than six (6) feet. Additional holes shall be provided if deemed necessary by the Engineer to secure adequate settlement. All holes shall be jetted and shall be carried to a point one (1) foot above the pipe. Drilling the holes by means of augers or other mechanical means will not be permitted. Care shall be taken in jetting so as to prevent direct contact with, or other disturbance of the pipe.
  - (b) Water Soaking --Water required for jetting and water soaking shall be provided as set forth in Special Provisions. The water shall be injected at a pressure and rate just sufficient to sink the holes at a moderate rate. After a hole has been jetted to the required depth, the water shall continue to be injected until it begins to overflow the surface. An approved soil auger shall be used for boring test holes. As soon as the jetting and water soaking has been completed, all holes shall be filled with soil and compacted. Surface depressions resulting from backfill substance caused by jetting and water soaking shall be filled and recompactd by tamping or rolling to the satisfaction of the Engineer.
- (20) Unsuitable Backfill Material - Where there is a deficiency of suitable backfill material, due to a rejection of part or all of the excavated material as unsatisfactory for backfill purposes, and other bedding

materials are not specified, the Contractor shall furnish satisfactory backfill material wasted from trench excavation in other locations or from other sources furnished by the Contractor. Backfill furnished and disposal of unsatisfactory material under these circumstances shall not be paid for directly, the cost of which is to be included in other bid items.

14.3.8 Tunnel --Where shown on the plans or where specifically authorized by the Engineer, pipe lines shall be constructed in tunnels. This work will be done in accordance with requirements of any permits obtained by WP UTILITIES, INC. from railroads or state or county highway departments, or in accordance with the following paragraphs.

- (1) Carrier Pipe materials shall be as shown on the plans, in these specifications or as described in the special provisions.
- (2) Requirements for excavation, laying and for joints shall be those applicable for the type of pipeline involved, unless otherwise specified.
- (3) The tunnel shall be only of sufficient width and height to provide free working space. The sides and roof of the tunnel shall be braced sufficiently to support the external loads and to prevent caving, bulging, and settlement of the earth.
- (4) The Contractor shall backfill all tunnels with well-compacted sand, fine gravel or stone screenings as rapidly as the conditions permit.
- (5) The backfill material shall be deposited in the tunnel in such a manner as not to injure or disturb the pipe. The filling of the tunnel shall be carried on simultaneously on both sides of the pipe in such a manner that injurious side pressures do not occur. Special care shall be taken to compact the backfill under the haunches of the pipe. The remainder of the tunnel, or such portion of the remainder as may be possible, shall then be backfilled by one of the following methods, at the option of the Contractor, if in the opinion of the Engineer, the method is practicable.
  - ? The material shall be deposited in uniform layers not to exceed twelve (12) inches thick (loose measure) and such layer either inundated or deposited in water.
  - ? The tunnel shall be backfilled with loose material or only partly backfilled at a time, if necessary, and settlement secured in either case by introducing water through holes jetted into the material to a point approximately two (2) feet above the top of the pipe.
  - ? If neither of the above methods is practicable or can be used for only a portion of the backfill, the remainder of the tunnel shall be completely backfilled with material carefully deposited in uniform layers and each layer compacted by ramming or tamping with tools approved by the Engineer.

- (6) When sheeting and bracing have been used, sufficient bracing shall be left across the trench as the backfilling progresses to hold the sides and top firmly in place without caving or settlement before the backfilling material shall be filled in a manner meeting the approval of the Engineer.
- (7) Any depressions, which may develop within the area involved in the construction operations due to settlement of the backfilling material, shall be filled in a manner meeting the approval of the Engineer.
- (8) Use of Casing Pipe - The Contractor may, subject to the approval of the Engineer, use metal casing pipe as a tunnel liner in place of timber shoring. The diameter, gauge and type of such pipe, method of placing and method of installing carrier pipe within it shall be subject to the approval of the Engineer. The entire void space between tunnel liners and pipe shall be filled with compacted sand or other approved material if such method of construction is used.
- (9) Jacking or Boring of Pipe - The Contractor may, subject to the approval of the Engineer; use special cast iron pipe bored into position with or without tunnel liners, for tunneled sections of pipe. In such cases all conditions of performance of the work shall be subject to the approval of the Engineer.
- (10) Restoration of Surfaces - Restoration of surfaces shall include the removal of the existing surface, the disposal of surplus material, and the construction of new surfaces as indicated on the plans or special provisions. The type of surface restoration required shall be shown on the plans or described in the special provisions.

14.3.9 Temporary Surface Over Trench - Wherever conduits are constructed under traveled roadways, driveways, sidewalks, or other traveled surfaces; a temporary surface may be placed over the top of the trench as soon as possible after compaction, when approved by the Engineer. The temporary surface shall consist of a minimum of six (6) inches of coarse aggregate conforming to the current specifications of the SCDOT.

- (1) The top of the temporary surface shall be smooth and meet the grade of the adjacent undisturbed surface. The temporary surface shall be maintained at the Contractor's expense until final restoration of the street surface is completed as specified. No permanent restoration of street surface shall be initiated until authorized by WP UTILITIES, INC. The temporary surfacing shall be required over the entire width of the trench.
- (2) Where ordered by the Engineer, the Contractor shall accomplish dust control over temporary surfaces.

- (3) Payment for temporary surface over trench will not be paid for directly, the cost to be included in the items Remove and Replace Pavement, Remove and Replace Driveways and Remove and Replace Sidewalks.

14.3.10 Removal of Pavement, Sidewalk, Driveway and Curb - Wherever the pipe is located along or across an improved surface, the width of the trench shall be held as nearly as possible to the width specified. Where brick or concrete pavement, sidewalk, driveway or curbing is cut, the width of the cut will exceed the actual width of the top of the trench. Exposed surfaces of portland cement or asphaltic concrete shall be cut with a pavement saw before breaking. Care shall be taken in cutting to insure that a straight joint is sawed.

14.3.11 Replacement of Permanent Type Pavement, Sidewalks, Driveways, Curbs, Gutters and Structures-- The Contractor shall restore (unless otherwise specified or ordered by the Engineer) all permanent type pavements, sidewalks, driveways, curbs, gutters, shrubbery, fences, poles, and other property and surface structures removed or disturbed during or as a result of construction operations to a condition which is equal in appearance and quality to the condition that existed before the work began. The surface of all improvements shall be constructed of the same material and match in appearance the surface of the improvement, which was removed. All work shall be in accordance with applicable details shown on the plans and in these specifications.

Materials shall conform to SCDOT Standard Specifications for Highway Construction, latest edition.

14.3.12 Sewer Pipe Laying-- Laying of sewer pipe shall be accomplished to line and grade in the trench only after it has been dewatered and the foundation and/or bedding has been prepared. Mud, silt, gravel and other foreign material shall be kept out of the pipe and off the jointing surfaces.

- (1) All pipe laid shall be retained in position so as to maintain alignment and joint closure until sufficient backfill has been completed to adequately hold the pipe in place. All pipes shall be laid to conform to the prescribed line and grade shown on the plans, within the limits that follow. At least three batter-boards shall be maintained in position during all pipe-laying operations, unless a laser beam is used.
- (2) Variance from established line and grade shall not be greater than one thirty-second ( $1/32$ ) of an inch, per inch of pipe diameter and not to exceed one-half ( $1/2$ ) inch provided that any such variation does not result in a level or reverse sloping invert; provided also, that variation in the invert elevation between adjoining ends of pipe, due to non-concentricity of joining surface and pipe interior surfaces, does not exceed one sixty-fourth ( $1/64$ ) inch per inch of pipe diameter, or one-half ( $1/2$ ) inch maximum.

- (3) The sewer pipe, unless otherwise approved by WP UTILITIES, INC., shall be laid up grade from point of connection on the existing sewer or from a designated starting point. The sewer pipe shall be installed with the bell end forward or upgrade, unless approved otherwise. When pipe laying is not in progress the forward end of the pipe shall be kept tightly closed with an approved temporary plug.

14.3.19 Sewer Pipe and Water Main Separation - Sanitary sewers, house sewers or storm drains that are laid in the vicinity of pipe lines designated to carry potable water shall meet the following conditions:

- (1) Parallel Installation - Sewers and Water Mains - Normal Conditions - Any sanitary sewer, storm sewer or sewer manhole shall be located at least ten feet horizontally from water mains, whenever possible; the distance shall be measured from edge to edge.
- (2) Unusual Conditions - When local conditions prevent a horizontal separation of ten feet, a storm or sanitary sewer may be laid closer to a water main provided that:
  - ? The bottom of the water main is at least 18 inches above the top of the sewer.
  - ? Where this vertical separation cannot be obtained, the sewer shall be constructed of materials and with joints that are equivalent to water main standards of construction.
- (3) Crossing - Sewers and Water Mains - Normal Conditions - Water mains crossing house sewers, storm sewers or sanitary sewers shall be laid to provide a separation of at least 18 inches between the bottom of the water main and the top of the sewer.
- (4) Unusual Conditions - When local conditions prevent a vertical separation of 18", the sanitary sewer shall be constructed of cast iron pipe meeting water main specifications.

14.3.19 Sewer Line Connections - No existing sewer shall be connected to a sanitary sewer unless specifically authorized in each instance by WP UTILITIES, INC. Storm drains and drain tiles shall not be connected to a sanitary sewer.

14.3.19 Service Wyes and Risers - Where the depth of the sewer invert is greater than twelve (12) feet below the surface of the ground, a service riser shall be constructed to an elevation as shown in the plans or as directed by WP UTILITIES, INC.

- (1) The service riser shall be constructed with a minimum six (6) inch wye branch as shown on the standard detail No. SSC-7, or as shown in the plans.

- (2) The riser pipe shall extend to the proper elevation and shall terminate with a manufactured plug.
- (3) Extreme care shall be taken in backfilling around risers. Where the excavated material is not suitable for this purpose in the opinion of the Engineer, granular material shall be placed around the riser.

14.3.16 Sewer Manholes-- Sewer manholes shall be constructed so that no water pipe or other conduit is in contact with or enclosed by any part of a sewer or sewer manhole.

- (1) Manholes shall be leak-tight and may be constructed of precast units, portland cement concrete brick or clay brick or cast-in-place concrete, all in accordance with plans and these specifications.
- (2) Strength - All concrete used in manhole construction shall have a minimum compressive strength of thirty-five hundred (3,500) psi at twenty eight (28) days. Strength determination shall be in accordance with ASTM C-39, unless otherwise approved by the Engineer.
- (3) Steps - Manhole steps shall be furnished and installed as shown on the plans.
- (4) Cast-in-Place Bases - Unless otherwise specified, cast-in-place bases shall be at least six (6) inches in thickness and shall extend at least six (6) inches radially outside of the outside dimension of the manhole section.
- (5) Brick Manholes - Masonry units or brick shall be laid up in full-unfurrowed mortar joints to provide complete filling of all horizontal and vertical joints. The inside of the manhole shall be made to conform to the shape and dimensions specified with reasonably even surfaces and with joints scraped or wiped flush. Steps shall be as specified for precast manholes. The outside of all brick sanitary manholes shall be coated for the purposes of waterproofing, with 1/2" of cement mortar material.
- (6) Precast Manholes - Precast manholes shall be constructed with a cast-in-place base as specified.

? Precast base sections are not approved.

? All lift holes in precast elements for sanitary sewer manholes shall be completely filled with an approved bit mastic material. All joints between precast elements on sanitary sewer manholes shall be made with an approved bit mastic material or an approved rubber gasket.

? The first precast section shall be placed on the monolithic base structure before the base has taken initial set, and shall be carefully adjusted to true grade and alignment with all inlet pipes properly

installed so as to form an integral watertight unit; or the section shall be mortared into a suitable groove provided in the top of the monolithic base. The first section shall be uniformly supported by the base concrete, and shall not bear directly on any of the pipes.

? Precast sections shall be placed and aligned to provide vertical sides and vertical alignment of the ladder rungs. The completed manhole shall be rigid, true to dimensions, and be watertight. In areas where the ground water table is expected to reach above the invert of the sanitary sewer manholes, the exterior of the manhole shall be sealed with bit mastic material if called for in the special provisions.

(7) Inlet and Outlet Pipe - Pipe or tile placed in the masonry for inlet or outlet connections shall extend through the wall and beyond the outside surface of the wall a sufficient distance to allow for connections, and the masonry shall be carefully constructed around them so as to prevent leakage along the outer surfaces.

(8) Excavating and Backfilling Manholes - In order to permit the joints to be mortared properly and also to permit proper compaction of the backfill material, the excavation shall be made to a diameter of at least six (6) inches greater than the diameter of the structure.

(9) Placing Castings - Castings placed on concrete or masonry shall be set in full mortar beds. The mortar shall be mixed in proportion of one (1) part cement to three (3) parts sand, by volume, based on dry materials. Castings shall be set accurately to the finished elevation so that no subsequent adjustment will be necessary.

(10) Manholes in Paved Streets - Where work is in paved streets or areas which have been brought to grade, not more than sixteen (16) inches shall be provided between the top of the cone or slab and the underside of the manhole casting ring for adjustment of the casting ring to street grade.

(11) Streets or Alleys With No Established Grade - The top of the manhole casting shall be flush with the street surface unless otherwise directed by the Engineer.

14.3.17 Fittings - Service sewers shall be connected to the wye, or riser provided in the public sewer where such is available, utilizing approved fittings or adapters. Where no wye, or riser is provided or available, connections shall be made by machine-made tap and suitable saddle, or other method approved by WP UTILITIES, INC.

14.3.18 Cleanouts - Cleanouts are not approved for construction on WP UTILITIES, INC. Sewer System.



14.3.19 Pipe Covering and Embankment - This section of the specifications applies to the construction of pipe covering and embankment. Pipe covering shall be constructed where the invert of the pipe is so shallow that placing of earth over the pipe becomes necessary to provide a minimum depth of cover. Pipe cover and embankment shall be constructed where the invert of the pipe is above the existing ground and it becomes necessary to construct an embankment upon which the pipe and pipe covering is to be placed. The embankment and cover shall be constructed to lines shown on the drawings.

- (1) Pipe Bed - The area upon which the embankment for the pipe bed is to be placed shall be stripped to the extent the Engineer directs to provide firm bedding.
  - ? The embankment upon which the pipe is to be installed shall be constructed up to the springing line in six (6) inch lifts, each lift being compacted to a density equal to ninety-five percent (95%) of AASHTO T-99 density. The material used in constructing the embankment shall be such that it will readily compact to required density. The Contractor may use any type of compacting equipment he wished provided the required end result is obtained, and provided no damage occurs to surface or subsurface improvements.
  - ? Pipe Cover - The pipe cover material above compacted embankment shall be placed without compaction, and shall be shaped to the required section.
  - ? Source of Material - The source of material shall be that which is specified in the special provisions.

#### SECTION 14.4      TESTING FOR ACCEPTANCE OF SANITARY SEWERS

14.4.1 Testing sanitary sewers for acceptability shall be conducted by the infiltration testing technique, as specified or approved by WP UTILITIES, INC.

14.4.2 Test Sections - Unless otherwise specified or directed by the Engineer the first section of sanitary sewer constructed of approximately 1,200 feet in length or the entire length of the sewer if it is less than 1,200 feet shall be tested by the infiltration method before additional excavation is permitted.

- ? WP UTILITIES, INC. may, at its option, divide the first section of sewer into subsections of more convenient length for testing. If the section or subsection tested does not pass the leakage tests it shall be repaired and the test repeated until a satisfactory test is obtained. Excavation shall not proceed beyond the first 1,200 feet test section until test results for the entire 1,200 feet are satisfactory.

14.4.3 Allowable Leakage for Sanitary Sewer - Infiltration flow shall be measured by a 90 degree V notch weir with free fall discharge or other means acceptable to WP UTILITIES, INC. All gravity sewers shall be designed and specified such

that the leakage outward (exfiltration) or inward (infiltration) shall not exceed two hundred (200) gallons per inch of pipe diameter per mile per day.

? A registered professional engineer shall certify the result in infiltration tests.

#### SECTION 14.5      MEASUREMENT AND PAYMENT

14.5.1      Work under this section will be measured and paid for as specified below. Wherever units of measure, i.e., lineal feet, each, and similar units of measurement are mentioned in the proposal, it shall be interpreted to mean the unit installed in accordance with the plans and specifications, and ready for use.

14.5.2      Sewer Pipe - Sewer pipe will be measured from center to center of manholes and depth of cut from invert to original ground line at centerline. The original ground line will be determined immediately prior to the beginning of trench excavation. It is the Contractor's responsibility to notify WP UTILITIES, INC. 24 hours in advance so that the Engineer may take measurements.

? Payment will be made at the unit prices per lineal foot as stated in the proposal for the type of pipe specified and shall include cost of excavation, bedding, backfilling, cleanup, testing, etc.

14.5.3      Ductile Iron Sewers - Where ductile iron pipe is shown in lieu of vitrified clay sewer pipe, measurement and payment will be made in accordance with Item 14.5.2.

(1) Cast iron Sewers in Steel Casing Pipe-- Where cast iron pipe is placed in steel casing pipe, measurement will be along the centerline of the pipe.

? Payment will be made at the unit bid price per lineal foot and shall include all necessary materials, tools and equipment necessary to install and grout the cast iron carrier pipe inside the casing. The unit bid price does not include the casing pipe. See Sections 13.2.1 and 13.2.2.

(1) Cast Iron Sewers in Tunnels - When cast iron pipe is placed in tunnels, measurement will be along the centerline of the pipe.

? Payment will be made at the unit bid price per lineal foot and shall include all necessary materials, tools and equipment necessary to install and grout the cast iron carrier pipe inside the tunnel lining. Unit bid price does not include the tunnel. See Section 13.5.8.

14.5.4      Service Sewers - Measurement shall be along the pipe from the outside surface of the main sewer to the extreme end of the last pipe or fitting placed. Measurement shall be to the nearest one (1) foot.

- (1) Measurement for service risers shall be from invert of the service wye to the top of the riser fitting along the centerline of the pipe. Measurement shall be to the nearest one (1) foot.
- (2) Payment for SERVICE SEWERS shall be at the unit contract price per lineal foot for SERVICE SEWERS of the size indicated. Payment for WYES shall be at the unit contract price per each. Payment for SERVICE RISERS shall be at the unit contract price per foot for SERVICE RISERS of the size indicated. Bends, adapters and plugs shall be considered, as incidental to the construction and all costs thereof shall be included in other pay items of the proposal.
- (3) Payment for cut-in connections to main sewers where no wye branch exists shall be at the contract unit price for wye branches.

14.5.5 Manholes - Manholes more than six (6') feet in depth shall be measured to the nearest one-tenth (0.10) of a foot, from invert of the outlet pipe vertically to the top of the casting, for the purpose of determining the additional depth of manhole to be paid for at the unit bid price per vertical foot in addition to the base price for each.

- (1) Drop manhole connections shall be measured to the nearest one-tenth (0.10) of a foot, from invert of the inlet pipe to the invert of the manhole.
- (2) Payment for each MANHOLE shall consist of a basic price per each, complete with frame, cover, base and steps, plus a unit price per foot, for all depth in excess of six (6') feet, plus a unit price per vertical foot for each DROP MANHOLE CONNECTION where they occur. Where more than one (1) type or size designation is shown on the drawings or called for in the special provisions, each shall be covered by a separate bid item of the following form:

- ? "Type \_\_\_\_-(or size) MANHOLE, each.
- ? ADDITIONAL DEPTH OF MANHOLE, per vertical foot.
- ? DROP MANHOLE CONNECTION, per vertical foot.

- (3) The unit contract prices shall be full compensation for furnishing and constructing manholes, complete in place, including excavation and connection to existing sewers.

14.5.6 Watertight Manhole Frame and Cover - The unit bid price for the item WATERTIGHT MANHOLE FRAME AND COVER -shall include all labor, tools, materials and equipment for furnishing and installing this lid in lieu of a standard manhole ring and cover.

14.5.7 Steel Casing Pipe - The payable boring footage will be the distance shown on the plans or as specified by the Engineer. The unit bid price per lineal foot of STEEL CASING PIPE shall include all labor, materials, tools, and equipment

necessary to install the casing. Unit bid price does not include the carrier pipe. (See Section 13.5.3).

- 14.5.8 Tunnel - TUNNEL will be paid for at the unit prices bid per lineal foot for TUNNEL for the various type and sizes for the actual length of tunnel work as shown on the plans. Payment shall include all labor, materials and equipment necessary to construct the tunnel, complete in place, including excavation and backfill, shoring and bracing, furnishing and laying casing pipe where required and all other work necessary for a complete installation. Unit bid price does not include the carrier pipe.
- 14.5.9 Concrete Cradle - Measurement shall be made along the centerline of the pipe and the pay quantity shall be determined from Standard Detail SSC#6 attached.
- ? Payment for furnishing CONCRETE CRADLE shall be made at the contract unit price per cubic yard for CONCRETE CRADLE. The contract price for CONCRETE CRADLE shall also include the cost of removing and disposing of the material replaced by the CONCRETE CRADLE. Unit price does not include the pipe.
- 14.5.10 Concrete Encasement - Measurement shall be made along the centerline of the pipe and the pay quantity shall be determined from Standard Detail SSC #6 attached.
- ? Payment for furnishing CONCRETE ENCASEMENT will be at the unit price per cubic yard of class of concrete stated in the proposal, such price to be paid in addition to that paid per foot of sewer for the various depths encountered. The unit price stated in the proposal shall include the cost-of additional depth of excavation, the furnishing and placing of concrete and laying of pipe to line and grade on bricks. See Standard Detail SSC #2.
- 14.5.11 Granular Cradle - Measurement of GRANULAR CRADLE shall be made by the cubic yard in place, based on the quantities per lineal foot for the respective size of conduit, as shown on Standard Detail SSC #6.
- ? Payment for GRANULAR CRADLE shall be made at the contract unit price per cubic yard for the type of GRANULAR CRADLE used. The contract unit price for GRANULAR CRADLE shall also include the cost of removing and disposing of the materials replaced by the GRANULAR CRADLE.
- ? When ordered by the Engineer, payment for additional depth of GRANULAR CRADLE shall be made at the contract unit price per cubic yard for GRANULAR CRADLE measured in place.
- 14.5.12 Selected Granular Backfill - Measurement shall be made along the centerline of the pipe and the pay quantity shall be determined from Standard Detail SSC #6 attached.

- ? Payment shall be made at the contract unit price per cubic yard for **SELECTED GRANULAR BACKFILL**. **SELECTED GRANULAR BACKFILL** in excess of the maximum quantity as herein specified shall be furnished and placed by the Contractor at his own expense.
- 14.5.13 Crushed Stone - **CRUSHED STONE**, to be used in stabilizing the bottom of trenches, etc., will be measured and paid for per ton at the unit price bid by the Contractor for **CRUSHED STONE**, which price shall include the material and the labor incident to the placing of the stone and any additional extra depth of trench or excavation necessary to accommodate the **CRUSHED STONE**.
- 14.5.14 Unclassified Excavation - **UNCLASSIFIED EXCAVATION** will not be paid for separately, the cost of which shall be included in the unit price for other items of work.
- ? When the removal of existing structures or materials is classified separately as a contract pay item, payment will be made in accordance with the contract price; otherwise such work will be considered as incidental work and will not be paid for directly, but its cost shall be included in the unit price-for other items of work. In either case, such price or prices shall be full compensation for all labor, materials, tools, equipment and incidentals necessary to complete the work and in the case of pavement cut and removal, shall include the cost of the required permit for cutting pavement, unless cost of permit fees are included as a bid item in the proposal.
- 14.5.15 Exploratory Excavation - The cost of such excavation, where ordered by the Engineer, will be paid at the, contract unit price per cubic yard for "**EXPLORATORY EXCAVATION**".
- 14.5.16 Rock Excavation - Where **ROCK EXCAVATION** is to be measured for payment; the Engineer will determine quantities. Rock required to be removed shall be computed by the cubic yard. Dimensions for pay purposes shall be the difference in elevation between the top and bottom of the rock as determined by the Engineer and the specified ditch width for the pipe size being laid. Where rock is encountered in the bottom of the trench, the maximum depth for payment purposes will be six (6) inches below the bottom of the pipe.
- ? Payment shall be made at the contract unit price per cubic yard for **ROCK EXCAVATION**. These prices shall be full compensation for furnishing all materials, for all preparation and excavation of rock, for backfilling the excavated trench to the bottom of the pipe with selected backfill material (13.3.7), and for all labor, equipment, tools and incidentals necessary to complete the item.
- 14.5.17 Remove and Replace Paving - Where excavation in pavement is required the work will be paid for at the unit bid price per lineal foot for **REMOVE AND**

REPLACE PAVEMENT and shall be measured along the centerline of construction. Extra width will not be measured for payment.

? The unit bid price for this item includes all labor, tools, equipment and materials necessary to complete the work. The unit bid price shall also include the cost of using flowable fill as backfill material and/or compaction to 95% maximum density as determined by AASHTO T-99 procedures. An approved laboratory shall certify all compaction testing. The unit bid price shall also include the cost of removing all paving materials, which are not suitable for backfilling the trench from the job. There will be no extra payment for any of the above work, the cost of which shall be included in the unit bid price for "Remove and Replace Paving".

14.5.18 Remove and Replace Asphalt Drive and Remove and Replace Concrete Drive  
This work will be paid for at the unit bid price per lineal foot for REMOVE AND REPLACE ASPHALT DRIVEWAY or REMOVE AND REPLACE CONCRETE DRIVE. Measurement for payment will be along the centerline of construction. Extra width will not be measured for payment.

? The unit price bid for this item shall include all labor, tools, equipment and materials necessary to accomplish the work and shall include the cost of removing all paving materials, which are not suitable for backfill in the trench from the job.

14.5.19 Resurface Existing Pavement - Payment for RESURFACING EXISTING PAVEMENT will be made at the unit bid price per square yard in accordance with field measurements of area made by WP UTILITIES, INC. The Contractor shall furnish WP UTILITIES, INC. all asphalt weight tickets at the time the work is accomplished. The computed yield, arrived at by dividing the weight of asphalt used by the measured area shall be a minimum of 150 pounds per square yard. In those areas where the work is acceptable to the State Department of Public Transportation and the County, yet the computed yield is less than 150 pounds per square yard, payment will be made for the item in direct ratio of the square of the actual yield to the square of 150 pounds per square yard.

14.5.20 P C Concrete Sidewalk - Concrete sidewalk shall be measured for payment based on the amount of sidewalk ordered removed and replaced by the Engineer. The width used for computing quantities shall be the actual width of the sidewalk unless specified otherwise by the Engineer. The unit bid price per square foot for this item will be complete payment for the above work.

14.5.21 Sheeting and Bracing - Payment for SHEETING AND BRACING, except when ordered left in place, and all other work incidental to SHEETING AND BRACING, shall not be made separately unless specified or as shown on the plans or as directed by WP UTILITIES, INC., but shall be included in the contract price for other items.

- (1) Payment for timber sheeting ordered left in place shall be made at the contract unit price per 1,000 board feet of TIMBER SHEETING LEFT IN PLACE.
- (2) Payment for STEEL SHEET PILING when specified shall be made at the contract unit price per square foot for STEEL SHEET PILING.
- (3) Payment for STEEL SHEET PILING ordered left in place shall be made at the contract unit price per square foot for STEEL SHEET PILING LEFT IN PLACE.

14.5.22 Fertilizing and Seeding - Measurement of surfaces to be sodded or seeded shall be made of the area within the rights-of-way designated by the Engineer for restoration. Payments shall be made at the contract unit bid price to the nearest one-tenth (0.10) acre, for FERTILIZING AND SEEDING of class specified. The cost of restoring areas beyond the right-of-way, designated by the Engineer, shall be borne by the Contractor.

14.5.23 Connections to Other Sewers or to Appurtenances - The lump sum price for making connections to other sanitary sewers and appurtenances shall be full compensation for removing, repairing and/or replacing pipe and/or structures and shall be full compensation for the completed work in place including all materials, labor, tools and equipment.

## **Article 15.**

### **SPECIFICATIONS FOR ROADY IMPROVEMENTS** **MATERIALS AND CONSTRUCTION**

#### **SECTION 15.1      GENERAL**

- 15.1.1      These specifications contemplate the installation of new roadways, the resurfacing/widening of existing roadways, and appurtenant roadway work within the road right-of-way, all in the corporate limits of WP UTILITIES, INC.
- 15.1.2      Roadway improvements will be installed at the locations shown on the plans and to the position, alignment and grade shown thereon. In the event of conflict in the vertical grading established, resolution of the conflict shall be as directed by WP UTILITIES, INC.
- 15.1.3      Water used for construction will be furnished by WP UTILITIES, INC. through approved connections to WP UTILITIES, INC. water system. Check valves to reduce the possibility of contamination will be furnished by the contractor when directed by WP UTILITIES, INC.
- 15.1.4      In distributing material and equipment at the site of the work, the Contractor shall locate them so that interference with traffic and ingress/egress shall be at a minimum.
- 15.1.5      All materials furnished by the contractor shall be delivered and distributed at the site by the Contractor. The Contractor at points designated by WP UTILITIES, INC. and hauled to the work site shall pick up materials furnished by WP UTILITIES, INC.
- 15.1.6      The Contractor shall proceed with caution in excavating so that the exact location of underground structures, both known and unknown may be determined. He shall be held responsible for the repair of such structures when broken or otherwise damaged.
- 15.1.7      Where there is a conflict between the General Specifications and Special Provisions, the Special Provisions shall govern.

#### **SECTION 15.2      CONSTRUCTION MATERIAL**

- 15.2.1      Materials used in the building of new roadways, the resurfacing and widening of existing roadways, and appurtenant roadway work will be in accordance with the South Carolina Department of Highways and Public Transportation Standard Specifications, latest edition.



- 15.2.2 Standard Drawings - The attached drawings #RD-1, RI-1 through RI-10, represent typical details of construction and materials to be used in the course of roadway construction. They are meant to illustrate acceptable standards; approved equals must be submitted to WP UTILITIES, INC. for its approval prior to their use in the WP UTILITIES, INC. system.
- 15.2.3 Where there is a conflict between the South Carolina Department of Highways and Public Transportation Department's Standard Specifications, and the Special Provisions, the Special Provisions will govern.

#### SECTION 15.3 CONSTRUCTION METHOD

- 15.3.1 Construction methods used in the building of new roadways, the resurfacing and widening of existing roadways, and appurtenant roadway work will be in accordance with the South Carolina Department of Highways and Public Transportation's Standard Specifications, latest edition.
- 15.3.2 Where there is a conflict between the South Carolina Department of Highways and Public Transportation's Standard Specifications and the Special Provisions, the Special Provisions shall govern.

#### SECTION 15.4 TESTING METHOD

- 15.4.1 Frequency (minimum) of testing the new roadway, the resurfacing and widening of existing roadways, and appurtenant roadwork shall be as described in the South Carolina Department of Highways and Public Transportation's Standard Specifications, latest edition. Special Provisions may delineate additional testing.
- 15.4.2 The materials to be tested will be supplied by the Contractor. The Contractor will also supply personnel, tools, and equipment necessary for the Engineer or his representative to take samples.
- 15.4.3 The cost of minimum testing required by the standard specifications for highway construction will be borne by the Contractor except as specified in the Special Provisions.
- 15.4.4 Test locations selected will be solely at the discretion of WP UTILITIES, INC., or its representative.

#### SECTION 15.5 MEASUREMENT AND PAYMENT

- 15.5.1 Measurement of in place-completed work shall be in accordance with the South Carolina Department of Highways and Public Transportation's Standard Specifications, latest edition.

## **Article 16.**

### **SPECIFICATION FOR FENCING MATERIALS**

#### **SECTION 16.1      GENERAL**

- 16.1.1      These specifications cover materials and installation requirements for chain link fence with gates and other appurtenances.
- 16.1.2      The Contractor shall furnish WP UTILITIES, INC. with shop drawings of fencing, gates, etc. for his approval.
- 16.1.3      The Contractor shall do all necessary clearing, grubbing and grading along the line of work and shall furnish all materials and all labor for the installation of the fencing.
- 16.1.4      Upon completion of the work, the Contractor will be required to dispose of all surplus materials and rubbish and to restore all property, which has been damaged in the course of work.
- 16.1.5      The fence is to be erected along the lines established by WP UTILITIES, INC. and the bottom of the fabric is to be held as uniformly as practicable two (2") inches above finish grade.

#### **SECTION 16.2      CONSTRUCTION MATERIALS**

- 16.2.1      Fabric shall be woven to a height and of a gauge called out in the Special Provisions.
- 16.2.2      Fabric shall be woven in a two (2") inch mesh from steel wire. Fabric shall be hot dip galvanized after weaving with heavy zinc coating. Top and bottom salvages have a twisted and barbed finish; barbing to be done by cutting wire on a bias.
- 16.2.3      Tensile Strength: Wire of which the fabric is made shall have a minimum tensile strength of 80,000 pounds per square inch.
- 16.2.4      Galvanizing Test: WP UTILITIES, INC., acting through its Engineer, reserves the right to test the fabric used. Test to be in accordance with ASTM A90-69 or latest revision. This test to be made at Contractor's expense.
- 16.2.5      Barbed Wire: Barbed wire shall be of the four point pattern composed of two strands of 12 gauge steel wire with 14 gauge barbs spaced on five (5") inch centers. Barbed wire to be galvanized after weaving or galvanized before weaving when using aluminum barbs.

- 16.2.6 Line Posts: Use hot-dip galvanize 2 3/8" O.D. steel pipe weighing a minimum of 3.65 pounds per lineal foot. No used, re-rolled or open seam material will be permitted in posts or rails.
- 16.2.7 Terminal Posts: End, corner and pull posts shall be hot-dip galvanized steel pipe 3" O.D. - 5.79 pounds per lineal foot. Gate posts, shall be hot-dip galvanized steel pipe in accordance with the following tabulations:

GATE FRAME	GATE OPENING	GATE POST	MINIMUM WEIGHT PER LIN. FT.
2" O.D.	Single to 6' or Double to 12' Incl.	3" O.D.	5.79
2" O.D.	Single Over 6' to 13' or Double Over 12' to 26' Incl.	4" O.D.	9.11
2" O.D.	Single Over 13' to 18' or Double Over 26' to 36' Incl.	6-5/8" O.D.	18.97
2" O.D.	Single Over 18' or Double Over 36'	8-5/8" O.D.	24.70

- 16.2.8 Post Spacing: Posts to be spaced in line of fence not farther apart than 10 ft. centers.
- 16.2.9 Post Setting: All posts to be set plumb and to be set in concrete footings of proper size and shape as shown in Standard Details FC #3 and FC #4 to furnish a foundation and support sufficient to withstand any strain or shock ordinarily brought to bear on a fence of this character. A liberal factor of safety is to be provided.
- 16.2.10 Extension Arms: Line post arms shall be of pressed steel, end and corner post arms of malleable iron or pressed steel; gate posts to have ball top. Each arm to carry three barbed wires at an angle of 45 degrees; the top most barbed wire approximately 12 inches above the fabric and approximately 12 inches from fence line as shown in Standard Details FC #6 and FC #7. Barbed wires to be securely fastened in slots by heavy wire pins. Arms having projections to be bent down over barbed wires may not be used. All components shall be hot-dip galvanized.

- 16.2.11 Top and Bottom Rail (Standard Detail FC #2): Shall be hot dip galvanized steel pipe 1 5/8" O.D., or "H" Section, weight 2.27 lbs. Per lineal foot; provided with couplings approximately every 20 feet. Couplings are to be outside sleeve type and at least 7 inches long; one coupling in every five to have a heavy spring to take up expansion and contraction. Top rail to pass through base of line post tops and form a continuous brace from end to end of each stretch of fence. Top and bottom rail to be securely fastened to terminal posts by pressed steel connections.
- 16.2.12 Braces (Standard Detail FC #1): Shall be hot dip galvanized. Brace material to be same as top rail. To be spaced midway between top rail and bottom rail and to extend from terminal post to first adjacent line post, and from gate post to first adjacent line post. Braces are to be securely fastened to posts by suitable pressed steel connections, then trussed from line post back to terminal post with 3/8" round rod.
- 16.2.13 Fittings: Shall be hot-dip galvanized. All fittings are to be malleable cast iron, or pressed steel.
- 16.2.14 Fabric Bands: Fabric is to be fastened to line posts with aluminum fabric bands spaced approximately 16 inches (to handle 8' fence) apart, and to top rail with tie wires spaced approximately 24 inches apart.
- 16.2.15 Gates (Standard Drawings FC #3, FC #4 and FC #: 5): Gate frames shall be constructed of 2" minimum outside diameter standard pipe, nominal weight 2.72 pounds per foot, hot--dip galvanized steel pipe, securely welded. Fabric to match the fence shall be installed in the frame by means of tension bars with hook bolts. Each frame shall be provided with 3/8" diameter adjustable truss rods. Bottom hinge to be heavy malleable iron ball and socket type designed to carry the weight of the gate. Upper hinge to be wrap around type with malleable base and pressed steel strap. Each gate to be equipped with positive type latching device with provision for padlocking. All gates to be provided with center plunger rod catch and semi-automatic outer catches to secure gates in opened position. Gate size shall be as called out in the Special Provisions.

## Article 17.

### **SPECIFICATIONS FOR SODDING, FERTILIZING AND SEEDING**

#### SECTION 17.1      GENERAL

At locations indicated on the plans, in the special provisions, or where designated by the Engineer, the Contractor shall prepare seed beds, furnish and spread fertilizers, and furnish and plant the seed specified herein on disturbed areas.

#### SECTION 17.2      CONSTRUCTION MATERIALS

17.2.1      Fertilizer shall be standard commercial 10-8-6 or 10-6-4 grade, uniform in composition, free flowing and suitable for application with approved equipment, delivered to the site in bags or other convenient containers, each fully labeled, conforming to applicable State laws.

17.2.2      Lime shall be ground limestone containing all of the finer particles obtained in the grinding process and ground sufficiently fine so that not less than 80 per cent will pass through a No. 8 sieve. The calcium carbonate equivalent must be at least 80 per cent. One or both must be greater than 80 so that the multiplication of the percent of calcium carbonate equivalent by the per cent of material passing through the No. 8 sieve will be equal to or be in excess of 0.72. The moisture content at the time of shipment must not exceed 8 per cent.

17.2.3      The classes of Seeding Mixture shall consist of one or more of the classes listed below. Seeding Mixtures from the specified class shall be designated by WP UTILITIES, INC., based on the season of the year when seeding operations are performed.

17.2.4      Seeding Mixtures

LOCATIONS	SEEDS	LBS./ACRE	SEASON TO USE
1-Sunny	Bermuda, hulled	25	February through April
	Bermuda, unhulled	25	
	Rye grass, Italian	150	
2-Sunny	Bermuda, hulled	25	May through September 15
	Bermuda, unhulled	25	
	Millet, brown top	25	
3-Sunny	Bermuda, unhulled	60	September 15 Through February
	Rye Grass, Italian	150	

LOCATIONS	SEEDS	LBS./ACRE	SEASON TO USE
4-Shady	Substitute carpet grass For Bermuda in 1, 2, and 3	40	All Seasons
5-Steep Slopes	Lespedeza, Sericea (Clay Soils) Add to 1, 2, 3, and 4	25	
6-Other	Love grass, weeping (Sandy Soils) Add to 1, 2, 3, and 4	30	
<p>Use Dolomite Limestone at one ton per acre. Use 500 lbs. of 10-10-10 Fertilizer per acre</p>			

17.2.5 Hydro Seeding Steep Slopes: After proper preparation - use the following:

1/2 lb. unhulled Bermuda seed/1,000 sq. ft.

1/2 lb. hulled Bermuda seed/1,000 sq. ft.

8 lbs. 12-4-8 Fertilizer/1,000 sq. ft.

35 lbs. wood fiber with tack/1,000 sq. ft.

\*4 lbs. Italian Rye grass seed/1,000 sq. ft. (September 15 March)

\*Substitute 3/4 lb. Brown Top Millet/1,000 sq. ft. from April to September 15

### SECTION 17.3 CONSTRUCTION METHODS

17.3.1 After the areas to be seeded have been brought to the proper grades and cleared of all stones, boulders and debris, the areas shall be thoroughly tilled to a depth of at least three (3) inches by disking, harrowing or other approved methods until the condition of the soil is acceptable to the Engineer. If, as a result of a rain, a crust is formed over the prepared surface, the surface shall again be placed in a suitable condition for planting.

17.3.2 Fertilizer shall be distributed uniformly at the rate of four hundred (400) pounds per acre, over the area indicated to be fertilized, and shall be incorporated into the soil to a depth of at least three (3) inches by disking, harrowing or other approved methods acceptable to WP UTILITIES, INC.

The incorporation of fertilizer may be a part of the tillage operation specified above.

- 17.3.3 Lime shall be distributed uniformly on all areas to be fertilized at the rate of one (1) ton to one (1) acre and shall be incorporated in the soil to a depth of at least three (3) inches by disking, harrowing, or other methods acceptable to WP UTILITIES, INC., immediately following or simultaneously with the incorporation of the fertilizer.
- 17.3.4 Seeding Methods - No seed shall be sown during high winds or when the ground is not in a proper condition for seeding nor shall any seed be sown until the purity test has been completed for the seeds to be used, and shows that the seed meets the noxious weed free requirements. Equipment shall be operated in a manner to insure complete coverage of the entire area to be seeded. When seed or fertilizer is applied with a hydraulic seeder, the rate of application shall be not less than 1,000 gallons of slurry per acre. This slurry shall contain the proper quantity of seed or fertilizer specified per acre. When using a hydraulic seeder, the fertilizer and seed shall be applied in two separate operations.
- 17.3.5 Within 12 hours, all seed areas shall be rolled at right angles to the run off with an approved type roller or cultipacker to compact the seedbed and place the seed in contact with the soil. On areas seeded with a hydraulic seeder, rolling shall not be required.
- 17.3.6 The optimum depth for seeding shall be one quarter (1/4) inch.
- 17.3.7 All legumes shall be inoculated with the proper bacteria in the amounts and manner recommended by the manufacturer of the inoculants before sowing or being mixed with other seeds for sowing. The inoculants shall be furnished by the Contractor and shall be approved by the Engineer. The seed shall be sown as soon as possible after inoculation and seed that has been standing more than five hours after inoculation shall be reinoculated before sowing. If hydro seeder applies legumes, three times the normal amount of inoculants shall be used. The Contractor shall furnish the inoculants and the cost of furnishing same shall be included in the contract unit price per acre for seeding of the class specified.
- 17.3.8 The classes of seeding mixtures shall consist of one or more of the classes listed. The Engineer, based on the season of the year when seeding operations are performed, shall designate seeding Mixtures from the specified classes.
- 17.3.9 Replacement of soded areas - At locations specified, or shown on the plans, or designated by WP UTILITIES, INC., the Contractor shall remove and carefully store the sod. Upon compaction of the trench in a manner satisfactory to the Engineer, the sod shall be replaced in a neat, workman like manner, over a minimum of two (2) inches of topsoil. The Contractor will furnish any deficiency in sod necessary to restore the surface to a condition comparable to that, which existed before construction operations began unless

otherwise specified. Unless replacement of sod is required, the Contractor shall restore all disturbed soded areas by placing a minimum of four (4) inches of approved topsoil over disturbed areas and seeding with approved grass seeds. The Contractor shall maintain seeded areas until certification of completion by WP UTILITIES, INC.

#### SECTION 17.4      MEASUREMENT AND PAYMENT

- 17.4.1      Sodding, Fertilizing and Seeding - Measurement of surfaces to be soded or seeded shall be made of the area within the right-of-way designated by WP UTILITIES, INC. for restoration. Payments shall be made at the contract unit price per square yard for SODDING and per acre measured to the nearest one-tenth (0.10) acre, for FERTILIZING AND SEEDING of class specified. The cost of restoring areas beyond the right-of-way, designated by WP UTILITIES, INC., shall be borne by the Contractor.



## **Article 18.**

### **SPECIFICATIONS FOR PRESSURE REDUCING VALVE HOUSING**

#### **SECTION 18.1      GENERAL**

The work under this section covers construction of the building used to house the pressure reducing valve assembly. Construction detail drawings PRV #1 through PRV #3 attached hereto are a part of these specifications.

#### **SECTION 18.2      BUILDING EXCAVATION AND FILL**

18.2.1      The extent of Building Excavation and Fill shall extend a minimum of two (2) feet beyond the building perimeter.

18.2.2      Site Preparation and Excavation - Site preparation will include the removal of all surface vegetation, organic laden topsoil's, existing fill, and any other unsuitable surface materials. After stripping, the exposed sub grade will be evaluated by WP UTILITIES, INC. to confirm that all unsuitable materials have been removed.

18.2.3      Grading - Grading shall cover the building site and its surrounds.

#### **18.2.4      Placement and Compaction**

- (1) Place backfill materials in layers not more than 8" in loose depth for materials compacted by heavy compaction equipment and not more than 4" in loose depth for material compacted by hand-operated tampers.
- (2) Before compaction, moisten or aerate layer as necessary to provide the optimum moisture content of the soil material. Compact each layer to the required percentage of maximum dry density or relative dry for each area classification. Do not place backfill material in surfaces that are muddy.
- (3) Place backfill materials evenly adjacent to structures, to the required elevations. Take care to prevent, wedging action of the backfill against structures by carrying the material uniformly around the structure to approximately the same elevation in each lift

#### **18.2.5      Compaction Requirements**

Compact soil to not less than 95 percent of a soils maximum dry density as compared to the Standard Proctor Compaction Test (ASTM D698-70). The Contractor will be responsible for all testing required to assure the above compaction requirements are met.

### SECTION 18.3      FLOOR

Site shall be graded and leveled; floor shall be a concrete slab reinforced with wire mesh cast on a layer of crushed stone bedding. A vapor barrier shall be installed under the concrete slab.

### SECTION 18.4      MASONRY WORK

The work includes furnishing all materials and equipment and performing all labor necessary to construct the masonry work indicated or specified herein. Masonry work shall be coordinated with the work of other trades.

18.4.1      Materials: Cement, lime and other cementations materials shall be delivered to the site and stored in unbroken bags, barrels, or other approved containers, plainly marked and labeled with the manufacturer's names and brands. Such materials shall be stored in dry, weather tight sheds or enclosures, and shall be stored and handled in a manner which will prevent the inclusion of foreign materials and damage by water or dampness. Masonry units shall be handled with care to avoid chipping and breakage. Materials stored on newly constructed floors shall be stacked in such a manner that the uniformly distributed loading does not exceed 50 psf. Masonry materials shall be properly protected from contact with the earth and exposure to the weather, and shall be kept dry until used. Materials containing frost or ice, and cement and lime which have been wetted by rain or other water prior to incorporation in mortar, shall not be used.

- (1)      Concrete Masonry Units shall be of modular dimensions, and shall be air, water or steam cured. Units shall be stored before use a minimum of 28 days for air cured units; 10 days for steam or. Water cured units; and 3 days for units cured with steam at a pressure of 120 to 150 psi and at a temperature of 350 to 365 degrees F for at least 5 hours. Surfaces of units which are to be left exposed in the finished work, or, which are to be painted, shall be relatively smooth with a uniform texture. Surfaces of units to receive plaster or stucco shall be sufficiently rough to provide a suitable bond.
- (2)      Hollow Load-Bearing Units shall be made with normal weight aggregates and shall conform to ASTM C90. Grade N-I units shall be provided for exterior and foundation walls.

18.4.2. Portland Cement Mortar shall consist of portland cement, fine aggregate and water.

- (1)      Ingredients - All materials for mortar shall conform to requirements of the SCDHPT Standard Specifications where applicable and the following specifications:

- ? Portland Cement- ASTM Designation C150; SCDHPT Standard Specifications Section 501, Concrete Materials.
  - ? Sand-SCDHPT Standard Specifications Section 501 ASTM Designation C144, 501.04 Fine Aggregate; Section 501, Concrete Materials.
  - ? Water-SCDHPT Standard Specifications Section 501.06 Water; Section 501, Concrete Materials:
- (3) All equipment, tools and machinery used in mixing and the Engineer shall approve handling mortar.
- (4) Composition-- The proportions of portland cement, fine aggregate and water shall be such as to produce a plastic mortar. The workability shall be consistent with the type of work for which it is used in order to secure the best results.
- ? The mortar as specified for the several types of work, shall be proportioned one part cement and three parts fine aggregate.
  - ? Proportioning of batches shall be by volume unless otherwise shown on the plans or specified in the Special Provisions. One sack of cement weighing ninety-four (94) pounds shall be considered one (1) cubic foot. -Correction for bulking of the fine aggregate shall be made as directed by WP UTILITIES, INC.
- (4) Admixture
- ? Lime-Lime which has been thoroughly air slaked may be added in quantities up to ten (10) percent of the cement content of the mix to increase the workability of the mortar, upon approval of or at the direction of WP UTILITIES, INC. Lime shall conform to ASTM Specifications, Designation C-141.
  - ? Commercial Admixtures-Commercial admixtures to increase the workability of mortar or concrete will not be used unless specifically approved in writing by WP UTILITIES, INC.

## SECTION 18.5 PORTLAND CEMENT CONCRETE

Portland cement concrete for structures shall conform to Section 701 of the SCDHPT Standard Specifications for Highway Construction, latest edition.

- 18.5.1 The 28-day compressive strength of concrete shall be not less than 3000 psi, which shall be demonstrated by standard compressive tests. Each test shall consist of duplicate cylinders and not less than one test shall be made for each 50 cubic yards. One cylinder of each pair shall be tested after seven days and shall have a compressive strength of not less than 2000 psi.

- 18.5.2 Concrete shall contain not less than six sacks of cement per cubic yard and not more than six gallons of water per sack of cement, including water contained in aggregate.

#### SECTION 18.6 REINFORCING STEEL-

Reinforcing steel shall be of new billet steel, intermediate grade, made by the open-hearth process, conforming to the requirements of the "Standard Specifications for Billet Steel Concrete Reinforcement Bars", Serial Designation C15-33 of the ASTM Designation A615-80. In addition to the reinforcing indicated on the plans, the Contractor shall furnish all necessary support bars, tie bars, etc., required for properly supporting and spacing the bars in the forms. The reinforcement will be subject to field inspection for rust, shape and dimensions.

- 18.6.1 Wire mesh used as reinforcement shall be of the size and spacing shown on the plans. The wire mesh shall comply with ASTM-A-185.

#### SECTION 18.7 HORIZONTAL JOINT REINFORCEMENT-

Joint reinforcements shall be fabricated from cold drawn steel wire conforming to ASTM Specification A-82. The wire shall be either copper-clad steel or zinc coated after fabrication. Reinforcement shall consist of two or more parallel longitudinal wires, not less than 0.1620 inches in diameter, weld connected with cross wires not less than 0.1483-inch diameter. The out-to-out spacing of the longitudinal wires shall be 1-1/2 to 1-3/4 inches less than the actual width of the wall. The distance between welded contacts of cross wires with each longitudinal wire shall not exceed 6 inches for smooth wire and 16 inches for deformed wire. Joint reinforcement shall be provided in flat sections not less than 10 feet in length, except that corner reinforcements and other special shapes may be less in length.

#### SECTION 18.8 ANCHORS AND TIES

Anchors and ties shall be of approved designs and shall be of zinc coated steel, or of non-corrodible metal having the equivalent total strength of steel types. The hot-dip process shall coat Zinc-coated materials after fabrication.

#### SECTION 18.9 FASTENINGS-

Suitable galvanized bolts or other approved metal fastenings shall be provided as necessary.

#### SECTION 18.10 MORTAR AND GROUT MIXING-

Materials shall be measured in approved containers, which will insure that the specified proportions of materials will be controlled, and accurately maintained during the progress of the work. Measuring materials with shovels will not be permitted. Unless specified otherwise, mortar and grout shall be mixed in proportions by volume. The aggregates shall be introduced and mixed in such a manner that the materials will be distributed

uniformly throughout the mass. A sufficient amount of water shall be added gradually and the mass further mixed, not less than 3 minutes, nor more than 5 minutes, until a mix of the plasticity necessary for the purposes intended is obtained. The materials shall be machine-mixed in approved mixers, of the type in which the quantity of water can be controlled accurately and uniformly. Hand mixing may be used only when specifically approved. Mortar boxes, pans and/or mixer drums shall be kept clean and free of debris or dried mortar. The mix shall be used before the initial setting of the cement has taken place, re-tempering of mortar or grout in which cement has started to set will not be permitted. Anti-freeze compounds, salts, or, any other substance used to lower the freezing point of the mix will not be permitted. Mortar joints shall be 3/8 inch.

- 18.10.1 Mortar for Block Work-- The color of cement and sand used in mortar for exposed work shall produce, without the admixture of any coloring matter, a mortar of uniform shade.

#### SECTION 18.11 ERECTION CONDITIONS –

Masonry shall not be laid when the air temperature is below 40° F. on a falling thermometer or, when it appears probable that temperatures below 40° F will be encountered before the mortar has set unless adequate means are provided for protecting the work from freezing. Work will not be permitted with, or on, frozen materials. Scaffolding shall be inspected regularly and shall be amply strong, well braced and securely tied in position. Overloading of scaffolding will not be permitted. Tops of exposed walls and partitions shall be covered with a waterproof membrane, well secured in place, when not being worked on.

- 18.11.1 Workmanship - Masonry walls shall be carried up level and plumb all around. One section of the walls shall not be carried up in advance of the others unless specifically approved. Unfinished work shall be stepped back for joining with new work; toothing will not be permitted except where specified or specifically approved by the Engineer. Heights of masonry shall be checked with an instrument at each floor, and at sills and heads of openings, to maintain the level of the walls. Masonry units shall be handled with care to avoid chipping, cracking and spalling of faces and edges: Drilling, cutting, fitting and patching, to accommodate the work of others, shall be performed by masonry mechanics. Masonry shall be cut with masonry saws in exposed work, where directed. Chases of approved dimensions for pipes and other purposes shall be provided where indicated or necessary.
- 18.11.2 Openings and Accessories - Door and window frames, louvered openings, anchors, pipes, or conduits shall be built in carefully and neatly as the masonry work progresses. Ties and anchors shall be placed accurately as shown or herein specified as the work progresses. Grouting of ties or anchors into hardened mortar or grout will not be permitted. Spaces around metal door frames shall be filled solidly with mortar. Structural steelwork, bolts, anchors, inserts, plugs, ties, lintels and miscellaneous metal work specified elsewhere shall be placed in position as the work progresses.

- 18.11.3 Cleaning - During construction, care shall be taken continuously to keep the exposed faces clean of mortar and other stains. When mortar joints reach thumbprint hardness and are tooled, the exposed work shall be brushed with a soft fiber brush to remove adhering mortar, and a wood paddle shall be used to remove more tenacious material. Bases of walls shall be protected from splash stains by covering the adjacent ground with sand, sawdust, or polyethylene. At the completion of the masonry work, holes in exposed masonry shall be pointed, and defective joints shall be cut out and tuck pointed solidly with mortar which has been re-tempered one to two hours after original mixing.
- 18.11.4 Caulking - All exterior joints where masonry abuts other construction shall be raked approximately 1/2 inch and filled with an approved non-staining caulking compound.

## SECTION 18.12 METAL DOORS AND FRAMES –

All doors and frames shall be the standard products of manufacturers regularly engaged in the production of metal doors and frames.

- 18.12.1 Metal Louvers for Doors - Where louvers are indicated they shall be of the inverted “V” or “Y” shaped type, about 1 1/2 inches wide across the open ends of the members, vision-proof, and fixed. Louvers shall be made of furniture steel; the slats shall be installed on 1 inch centers providing a clear space of 1/2 inch between slats shall prevent drafts, afford maximum air delivery, and shall admit light. Frames shall be steel channels of suitable size. The top and bottom members of all louvers shall be designed to prevent the collection of dust. They shall be secured to the doors in accordance with the manufacturer's standard practice. A rewirable type of metal frame, screened with 18 x 12 mesh copper screen cloth, shall be fastened to the back of each louver.
- 18.12.2 Rust Proofing - The door and frames may be given a rust resisting treatment metallic primer in accordance with the manufacturer's standard practice, in lieu of paint. Upon completion of the shop work, all marred surfaces shall be re-coated thoroughly.

## SECTION 18.13 FINISH HARDWARE –

The work includes furnishing and installing finish hardware necessary for the complete finish of the buildings. All hardware shall, as far as practicable, be of one manufacturer's make. Hardware for application on metal shall be made to standard templates, and the templates shall be furnished to the metal door and frame manufacturer.

- 18.13.1 Location - Hardware on hinged doors shall be located as follows, unless-indicated or specified otherwise.

18.13.2 Locks - Knobs shall be installed on doors at the same height from the floor throughout the buildings. The center of doorknobs shall be approximately 37 inches above the finish floor.

18.13.3 Hinges shall be located as follows:

? Top Hinge-- Not over 9 3/4 inches from the inside of frame rivet at head to center of hinge.

? Bottom Hinge - Not over 10-3/8 inches from finished floor to center of hinge.

? Center Hinge-- Midway between top and bottom hinges.

18.13.4. Keys-- Two tagged keys shall be furnished for each lock. All entrance doors to the building shall be keyed alike.

#### SECTION 18.14 MISCELLANEOUS METAL WORK –

The work includes furnishing all materials, labor, tools, etc., to provide the miscellaneous metal work as indicated or specified complete.

18.14.1 General Requirements - Steel and iron shall be standard, well finished, structural shapes, or commercial grade, bar steel or bar iron. Steel pipe shall be standard weight. Welding shall conform to applicable requirements of D1.0-63 of the American Welding society. All finished and/or machined faces shall be true to line and level. Structural steel shall conform to ASTM A 36-67. Rolled shapes shall conform to the dimensions and weights of Regular Series Shapes of the AISC.

18.14.2 Workmanship and Finish - shall be equal to the best practice of modern shops or a respective work. Exposed surfaces shall have smooth finish and sharp, well defined lines and arises. Sections shall be well formed to shape and size with sharp lines and angles; curved work shall be spring evenly to curves. All necessary rabbets, lugs and brackets shall be provided so that the work can be assembled in a neat and substantial manner. Holes for bolts and screws shall be drilled. Fastenings shall be concealed where practicable. Thickness of metal details of assembly and supports shall provide ample strength and stiffness. Joints exposed to the weather shall be formed to exclude water.

## Article 19.

### **SPECIFICATIONS FOR ALTITUDE VALVE VAULT**

#### SECTION 19.1      GENERAL

The work under this section covers construction of an underground vault to house an altitude valve, a check valve and miscellaneous valves and fittings.

#### SECTION 19.2      MATERIALS

##### 19.2.1      Portland Cement Concrete

- (1) Portland cement concrete for structures shall conform to Section 701 of the SCDHPT Standard Specifications for Highway Construction, latest edition.
- (2) The 28 -day compressive strength of concrete shall be not less than 3000 psi, which shall be demonstrated by standard compressive tests. Each test shall consist of duplicate cylinders and not less than one test shall be made for each 50 cubic yards. One cylinder of each pair shall be tested after seven days and shall have a compressive strength of not less than 2000 psi.
- (3) Concrete shall contain not less than six sacks of cement per cubic yard and not more than six gallons of water per sack of cement, including water contained in aggregate.

19.2.2      Reinforcing Steel - Reinforcing steel shall be of new billet steel intermediate grade made by the open hearth process, conforming to the requirements of the "Standard Specifications for Billet Steel Concrete Reinforcement Bars", Serial Designation C15-33 of the ASTM Designation A615-80. In addition to the reinforcing indicated on the plans, the Contractor shall furnish all necessary support bars, tie bars, etc., required for properly supporting and spacing the bars in the forms. The reinforcement will be subject to field inspection for rust, shape and dimensions.

19.2.3      Horizontal Joint Reinforcement: Joint reinforcements shall be fabricated from cold drawn steel wire conforming to ASTM Specification A82. The wire shall be either, copper-clad steel, or zinc-coated after fabrication. Reinforcement shall consist of two or more parallel longitudinal. Wires, not less than 0.1620-inch in diameter, weld connected with cross wires, not less than 0.1483-inch diameters. The out-to-out spacing of the longitudinal wires shall be 1-1/2 to --3/4 inches less than the actual width of the masonry. The distance between welded contacts of cross wires with each longitudinal wire shall not exceed 6-inches for smooth wire and 16-inches for deformed wire. Joint reinforcement shall be provided in flat sections, not less than 10 feet in



length, except that corner reinforcements and other special shapes may be less in length.

19.2.4 Concrete Masonry Units:

- (1) Concrete Masonry Units shall be of modular dimensions, and shall be air, water or steam cured. Units shall be stored before use a minimum of 28 days for air cured units; 10 days for steam or water cured units; and 3 days for units cured with steam at a pressure of 120 to 150 psi and at a temperature of 350 to 365 degrees F for at least 5 hours. Surfaces of units, which are to be. Left exposed in the finished work, or which are to be painted, shall be relatively smooth with a uniform texture. Surfaces of units to receive plaster or stucco shall be sufficiently rough to provide a suitable bond.
- (2) Hollow Load-Bearing Units shall be made with normal weight aggregates and shall conform to ASTM C90. Grade N-I units shall be provided for exterior and foundation walls.

19.2.5 Portland Cement Mortar - Portland Cement Mortar shall consist of portland cement, fine aggregate and water.

- (1) Ingredients-- All materials for mortar shall conform to requirements of the SCDHPT Standard Specifications where applicable and the following specifications:
  - ? Portland Cement - ASTM Designation C 150, SCDHPT Standard Specifications, Section 501, Concrete Materials.
  - ? Sand - ASTM Designation C144; SCDHPT Standard Specifications Section, 501.04 Fine Aggregate; Section 501, Concrete Materials.
  - ? Water-- SCDHPT Standard Specifications Section, 501.06 Water; Section 501, Concrete Materials.
- (2) All equipment tools and machinery used in mixing and handling mortar shall be approved by WP UTILITIES, INC.
- (3) Composition-- The proportions of portland cement, fine aggregate and water shall be such as to produce a plastic mortar. The workability shall be consistent with the type of work for which it is used in order to secure the best results.
  - ? The mortar as specified for the several types of work, shall be proportioned one part cement and three parts fine aggregate.
  - ? Proportioning of batches shall be by volume unless otherwise shown on the plans or specified in the Special Provisions. One sack of cement weighing ninety-.four (94) pounds shall be considered one

(1) cubic foot. Correction for bulking of the fine aggregate shall be made as directed by the Engineer.

(4) Admixture

? Lime - Lime which has been thoroughly air slaked may be added in quantities up to ten (10) percent of the cement- content of the mix to increase the workability of the mortar, upon approval of or at the direction of WP U. Lime shall conform to ASTM Specifications, Designation C-141.

? Commercial Admixtures - Commercial admixtures to increase the workability of mortar or concrete will not be used unless specifically approved in writing by the Engineer.

19.2.5 All other materials, not herein specified shall conform to applicable sections of SCDHPT Standard Specifications for Highways Construction, latest edition.

SECTION 19.3 CONCRETE MASONRY WORK

19.3.1 Delivery and Storage: Cement, lute and other cementations materials shall be delivered to the site and stored in unbroken bags, barrels, or other approved containers, plainly marked and labeled with the manufacturer's names and brands. Mortar materials shall be stored in dry weather tight sheds or enclosures, and shall be stored and handled in a manner, which will prevent the inclusion of foreign materials and damage, by water or dampness. Masonry units shall be handled with care to avoid chipping and breakage. Masonry materials shall be properly protected from contact with the earth and exposure to the weather, and shall be kept dry until used. Materials containing frost or ice, and cement and lime which have been wetted by rain or other water prior to incorporation in mortar, shall not be used.

19.3.2 Materials: Masonry work of the types indicated shall be provided. The source of supply for materials, which will affect the appearance of the finished work, shall not be changed after the work has started.

19.3.3 Erection Conditions: Masonry shall not be laid when the air temperature is below 40 degrees F on a falling thermometer, or when it appears probable that temperatures below 40 degrees F will be encountered before the mortar has set, unless adequate means are provided for protecting the work from freezing. Work will not be permitted with or on frozen materials. Masonry work may be started at 34 degrees F on a rising thermometer. Scaffolding shall be inspected regularly and shall be amply strong, well braced and securely tied in position. Overloading of scaffolding will not be permitted.

19.3.4 Workmanship: Masonry walls shall be carried up level and plumb all around. One section of the walls (other than reinforced walls) shall not be carried up in advance of the others unless specifically approved. Unfinished work shall be

stepped back for, joining with new work. Toothing will not be permitted, except where specified or specifically approved. Masonry units shall be handled with care to avoid chipping, cracking and spalling of faces And edges. Drilling, cutting, fitting and patching to accommodate the work of others, shall be performed by masonry mechanics. Masonry shall be cut with masonry saws in. exposed work, where directed. Chases of approved dimensions for pipes and other purposes shall be provided where indicated or necessary.

#### 19.3.5 Erection

- (1) Mortar and Grout Mixing: Materials shall be measured in approved containers, which will insure that the specified proportions of materials will be controlled and accurately maintained during the progress of the work. Measuring materials with shovels will not be permitted. Unless specified otherwise, mortar and grout shall be mixed in proportions by volume. The aggregates shall be introduced and mixed in such a manner that the materials will be distributed uniformly throughout the mass. A sufficient amount of water shall be added gradually and the mass further mixed, not less than 3 minutes, until a mix of the plasticity necessary for the purposes intended is obtained. The materials shall be machine mixed in approved mixers, of the type in which the quantity of water can be controlled accurately and uniformly. (Hand mixing may be used, only when specifically approved.) Mortar boxes, pans, and/or mixer drums shall be kept. clean and free of debris or dried mortar. The mix shall be used before the initial setting of the cement has taken place. Anti-freeze compounds, salts, or any other substance used to lower the freezing point of the mix, will not be permitted. Mortar joints shall be 3/8 inch.
- (2) Concrete Masonry Unit Work: The first course of concrete masonry units shall be laid in a full bed of mortar for the full width of the unit; the succeeding courses shall be laid with broken joints. The bed joints of concrete masonry unit shall be formed by applying the mortar to the entire top surfaces of the inner and outer face shells, and the head joints shall be formed by applying the mortar for a width of about one inch to the ends of the adjoining units laid previously. The mortar for joints shall be smooth, not furrowed, and shall be of such thickness that it will be forced out of the joints as the units are being placed in position. Where anchors, bolts and ties occur within the cells of the units, such cells shall be filled with mortar or grout as the work progresses. Metal lath shall be placed under cells before they are filled. Concrete brick shall be used for bonding walls, working out the coursing, topping out walls under sloping slabs, distributing concentrated loads, backing brick headers, and elsewhere as required. Concrete masonry units shall not be dampened before or during laying.

SECTION 19.4      ALTITUDE VALVE VAULT COVER

Vault Cover: The vault's cover shall be 1/4" floor plate, non-skid steel, with two hinged inspection lids to be placed as directed by the engineer. The plate shall be of adequate dimensions to completely cover the vault.

## **Article 20.**

### **USE OF PRIVATE SEWERS**

#### **SECTION 20.1      PRIVATE SEWERS REQUIREMENTS**

- 20.1.1      It shall be unlawful for any person to place, deposit, or permit to be deposited in any sanitary sewer any human or animal body parts, garbage, or other objectionable waste.
- 20.1.2      It shall be unlawful to discharge to any natural outlet within or in any area under the jurisdiction of WP UTILITIES, INC. any sewage or other polluted waters except where suitable treatment has been provided in accordance with subsequent provisions of this ordinance.
- 20.1.3      It shall be unlawful to construct or maintain any privy, privy vault, septic tank, cesspool, or other facility intended or used for disposal of sewage, where private sewers are available.
- 20.1.4      The owner of all houses, buildings, or properties used for human occupancy, employment, recreation, or other purpose situated within WP UTILITIES, INC. territory or right-of-way in which there shall be located a sanitary sewer of WP UTILITIES, INC. is hereby required at his expense to install and to connect such facilities directly with the proper public sewer in accordance with provisions of this article.
- 20.1.5      Persons responsible for an accidental spill or discharge of any substance into the treatment works which may adversely effect operation of the treatment works shall immediately notify WP UTILITIES, INC. of such a discharge and written notice with corrective action taken 24 hours of verbal notice. Failure to comply with this requirement shall constitute a misdemeanor.
- 20.1.6      The discharge of wastewaters to storm sewers is, without exception, prohibited.

#### **SECTION 20.2      PRIVATE SEWAGE DISPOSAL (Better Know “as” Step System)**

- 20.2.1      Where a sanitary gravity sewer line is not available under provisions of Section 20.1.4, the building sewer shall be connected to a Force Main sewage disposal system complying with the provisions of this article.
- 20.2.2      Before commencement of construction of a private sewage disposal system (Step System), the owner shall first obtain written approval by WP UTILITIES, INC., the application for such permit shall be made in writing by the applicant and shall include any plans, specifications, and other information as are deemed necessary by WP UTILITIES, INC. A permit and inspection

fee as described in Article 25 shall be paid to WP UTILITIES, INC. at the time application for permit is filed.

- 20.2.3 A permit for a private sewage system shall not become effective until the installation is completed to the satisfaction of WP UTILITIES, INC. WP UTILITIES, INC. shall be allowed to inspect the work at any stage of construction and in any event, the applicant for the permit shall notify WP UTILITIES, INC. when the work is ready for final inspection and before any underground portions are covered. The inspection shall be made within a reasonable time after the receipt of notice by WP UTILITIES, INC.
- 20.2.4 The type, capacities, location and layout of a private sewage system shall comply with all recommendations of the South Carolina Department of Health and Environmental Control AND WP UTILITIES, INC. Specifications and Plans. No septic tank or cesspool shall be permitted to discharge to any natural outlet.
- 20.2.5 The owner shall operate and maintain the private sewage disposal facilities in a sanitary manner at all times at no expense to WP UTILITIES, INC.
- 20.2.6 At such time as a private sewer becomes available to a property served by a stand alone septic system, as provided in Article 25, a direct connection shall be made to the private sewer in compliance with this Article and any septic tanks, cesspools, and similar private sewage disposal facilities shall be abandoned, cleaned of sludge and filled with clean bank-run gravel or dirt within sixty days of notification to do so by WP UTILITIES, INC.
- 20.2.7 The appropriate State or County Health Officer shall construe no statement contained in this article to nullify any additional requirements that may be imposed.
- 20.2.8 Alarm emergencies and all repairs will be reported to WP UTILITIES, INC. Should WP UTILITIES, INC. respond to calls for service on the Step Systems, a fee as described in Article 25 will be enforced.

## **Article 21.**

### **BUILDING SEWERS AND CONNECTIONS**

- 21.1.1 No person not authorized by WP UTILITIES, INC. shall uncover, make any connections with or opening into, use, alter or disturb any public sewer or appurtenances thereof without first obtaining a written permit from WP UTILITIES, INC. A violation of this section shall be a misdemeanor.
- 21.1.2 There shall be two classes of building sewer permits: (a) residential and commercial service and (b) for service to establishments producing industrial wastes; in either case, the owner or his agent shall make application in writing to WP UTILITIES, INC. The permit application shall be supplemented by any plans, specifications, or other information considered pertinent in the judgment of WP UTILITIES, INC. A permit and inspection fee for a residential, commercial building sewer permit or an industrial building sewer permit shall be paid to WP UTILITIES, INC. at the time the application is filed, as provided in Article 25.
- 21.1.3 All costs and expenses incidental to the installation and connection of the building sewer to the property line shall be borne by the owner. The owner shall indemnify WP UTILITIES, INC. from any loss or damage that may directly or indirectly be occasioned by the installation of the building sewer.
- 21.1.4 A separate and independent building sewer shall be provided for every building. Where one building stands to the rear of another on a single lot and no private sewer is available or can be constructed to the rear building through an adjoining alley, courtyard, or driveway, WP UTILITIES, INC. may grant permission for the building sewer from the front building to be extended to the rear building sewer, upon a showing by the applicant that it is not feasible that the two buildings so connected will ultimately be on separate lots.
- 21.1.5 Old building sewers may be used in connection with new buildings only when they are found, on examination and test by WP UTILITIES, INC., to meet all of the requirements of this ordinance.
- 21.1.6 The size, slope, alignment, materials of construction of a building sewer and the methods to be used in excavation, placing of the pipe, jointing, testing and backfilling and trench shall all conform to the requirements of the appropriate specifications of the ASTM or WPCF Manual of Practice No. 9, all installation to be subject to the expressed written approval of WP UTILITIES, INC. and in no case shall the size of pipe installed be less than four inches in nominal diameter.
- 21.1.7 Whenever possible, the building sewer shall be brought to the building at an elevation below the basement or first floor. No building sewer shall be made parallel to or within 3 feet of any bearing wall, which might thereby be

weakened. The depth shall be sufficient to afford protection from live loads (automobile, etc.), which may be superimposed. The building sewer shall be made at uniform grade and in straight alignment insofar as possible. The building sewer shall be constructed to such point as directed by WP UTILITIES, INC.

- 21.1.8 No person shall maintain or make a connection of roof downspouts, exterior foundation drains, areaway drains, or other sources of surface runoff or groundwater to a building sewer or building drain, which in turn is connected directly or indirectly to a public sanitary sewer.
- 21.1.9 A person properly licensed by WP UTILITIES, INC. to perform such services should complete the installation and connection of the building sewer to the property line.
- 21.1.10 Before any underground portions thereof are covered, the applicant for the building sewer permit shall notify WP UTILITIES, INC. when the building sewer is ready for inspection and connection to the public sewer. The connection thereof shall be made to the public sewer by a licensed plumber and only after inspection. The inspection thereof shall be made within two (2) working days of the receipt of notice by WP UTILITIES, INC.
- 21.1.11 All excavations for building sewer installation shall be adequately guarded with barricades and lights so as to protect the public from hazards. Streets, sidewalks, parkways and other public property disturbed in the course of the work shall be restored in a manner satisfactory to WP UTILITIES, INC.
- 21.1.12 WP UTILITIES, INC. shall keep a permanent and accurate record of the location, depth, and direction of all new sewer connections, including such land marks as may be necessary to make an adequate description.
- 21.1.13 All pertinent OSHA requirements must be met during the construction of any portion of the treatment works.
- 21.1.14 Wastewater Discharge Permits shall be expressly subject to all provisions of this ordinance and all other applicable regulations, user charges and fees established by WP UTILITIES, INC. Permits may contain the following:
  - (a) The unit charge or schedule of user charges and fees for the wastewater to be discharged to a community sewer;
  - (b) Limits on the average and maximum wastewater constituents and characteristics;
  - (c) Limits on average and maximum rate and time of discharge;
  - (d) Requirements for installation and maintenance of inspection and sampling facilities;



- (e) Specifications for monitoring programs, which may include sampling locations, frequency of sampling, number, types and standards for tests and reporting schedule;
- (f) Compliance schedules;
- (g) Requirements for submission of technical reports or discharge reports;
- (h) Requirements for maintaining and retaining plant records relating to wastewater discharge as specified by WP UTILITIES, INC., and affording it access thereto;
- (i) Requirements for notification of WP UTILITIES, INC. or any new introduction of wastewater constituents or any substantial change in the volume or character of the wastewater constituents being introduced into the wastewater treatment system;
- (j) Requirements for notification of slug discharges;
- (k) Other conditions as deemed appropriate by WP UTILITIES, INC. to ensure compliance with the ordinance.

21.1.15 Wastewater Discharge Permits are issued to a specific user for a specific operation. A Wastewater Discharge Permit shall not be reassigned, transferred, or sold to a new owner, new user, different premises, or a new or changed operation without the approval of WP UTILITIES, INC. Any succeeding owner or user shall also comply with the terms and conditions of the existing permit.

21.1.16 WP UTILITIES, INC. may develop, implement and enforce industrial discharge limitations that are more stringent than Federal or State limits in order to ensure compliance with the POTW's NPDES permit. In addition, revisions or adjustments to specific discharge limitations may be made at any time to ensure NPDES compliance protect the receiving waters, to correct operational/maintenance problems in the collection system and wastewater treatment plant, and to protect public health.

## **Article 22.**

### **USE OF THE PUBLIC SEWERS**

- 22.1.1 No person shall discharge or cause to be discharged any storm water, surface water, groundwater, roof runoff, or subsurface drainage to any public sewer.
- 22.1.2 No person shall discharge or cause to be discharged any of the following waters or wastes to any public sewer: (Refer to 21.1.3 and 21.1.9).
- (a) Pollutants which create a fire or explosion hazard in the POTW, including but not limited to waste streams with a closed cup flashpoint of less than 140 degrees Fahrenheit using the test methods specified in 40 CFR 261.21. Any gasoline, benzene, naphtha, fuel oil, or other flammable or explosive liquid, solid, or gas.
  - (b) Any water or wastes containing toxic or poisonous solids, liquids, or gases in sufficient quantity, either singly or by interaction with other wastes to injure or interfere with any sewage treatment process to constitute a hazard to humans or animals, to create a public nuisance, or to create any hazard in the receiving waters of the sewage treatment works.
  - (c) Any waters or wastes having a pH less than 5.0 or greater than 12.0 or having heavy concentrations of salts or having any other corrosive property capable of causing damage or hazard to structures, equipment, and personnel of the sewage plant.
  - (d) Solids or viscous substances in quantities or of such size capable of causing obstruction in the flow of sewage or other interference to the proper operation of the sewage works such as but not limited to ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, hair and fleshing or entrails, either whole or ground by garbage grinders.
  - (e) Any pollutants, including oxygen demanding pollutants (BOD, etc.) released at a flow rate and/or pollutant concentrated which a user knows or has reason to know will cause interference to the POTW. In no case shall a slug load have a flow rate or contain concentration or qualities of pollutants that exceed for any time period longer than fifteen (15) minutes more than five (5) times the average twenty-four (24) hour concentration, quantities, or flow during normal operation.
- 22.1.3 No person shall discharge or cause to be discharged the following described substances, materials, waters, or wastes if it appears likely, in the opinion of WP UTILITIES, INC., that such wastes can harm either the sewers, sewage treatment process, or equipment, have adverse effect on the receiving stream or can otherwise endanger life, limb, public property or constitute a nuisance. In

forming their opinion as to the acceptability of these wastes, WP UTILITIES, INC. will give consideration to such factors as the quantities of subject wastes in relation to flows, and velocities in the sewers, materials, of construction of the sewers, nature of the sewage treatment process, capacity of the sewage treatment plant, degree of treatability of wastes in the sewage treatment plant, and other pertinent factors. The substances prohibited are:

- (a) Any liquid or vapor in amounts which will inhibit biological activity at the Treatment Plant resulting in interference or causing damage, but in no case in such quantities that the temperature exceeds 150 degrees F. at WP UTILITIES, INC. Sewage System or 104 degrees F. at the Treatment Plant unless SCDHEC, upon request of WP UTILITIES, INC., approves alternate temperature limits.
- (b) Any water or waste containing fats, wax, grease or oils whether emulsified or not in excess of 100mg/1 or containing substances which may solidify or become viscous at temperatures between 32 or 150 degrees F. or 0 and 65 degrees C.
- (c) Any garbage that has not been properly shredded. The installation and operation of any garbage grinder equipped with a motor of 3/4 hpor greater shall be subject to the review and approval of WP UTILITIES, INC.
- (d) Any waters or wastes containing strong acid, iron pickling wastes or concentrated plating solution whether neutralized or not.
- (e) No person shall discharge substances in excess of the amounts established in their discharge permit.
- (f) Any waters or wastes containing phenols or other taste or odor producing substances in such concentration exceeding limits which may be established by WP UTILITIES, INC. as necessary after treatment of the composite sewage to meet requirements of the State, Federal, or other public agencies of jurisdiction of such discharge of the receiving waters.
- (g) Any radioactive wastes or isotopes of such half life or concentration as may exceed limits established by WP UTILITIES, INC. in compliance with applicable State and Federal regulations.
- (h) Any waters or wastes having a pH outside the range of 6.0 to 9.0. Without special permission from WP UTILITIES, INC.
- (i) Materials, which exert or cause:
  - (1) Unusual concentration of inert suspended solids; such as, but not limited to earth, lime slurries, and lime residues or of dissolved solids such as, but not limited to sodium chloride and sodium sulfate.

- (2) Excessive discoloration, such as, but not limited to dye wastes and vegetable tanning solutions. A spectrophotometer set at a wavelength of 254 nm measures the transmittance of UV light through a 1-centimeter sample as a percentage relative to deionized water set at 100%. No material, solution or color shall be added to the wastewater stream, which will cause UV transmittance to fall below 65%.
- (3) Unusual BOD, chemical oxygen demand, or chlorine requirements in such quantities as to constitute a significant load on the sewage treatment works.
- (4) Unusual volume of flow or concentration of wastes constituting slugs as defined herein.
- (j) Waters or wastes containing substances which are not amenable to treatment or reduction by the sewage treatment processes employed or are amenable to treatment only to such degree that the sewage treatment plant cannot meet the requirements of other State or Federal agencies having jurisdiction over discharge to the receiving waters.
- (k) Petroleum oil, non-biodegradable cutting oil or products of mineral oil origin in amounts that will cause interference or pass through, but in no case amounts greater than 100 mg/l.
- (l) Pollutants, which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems.
- (m) Any trucked or hauled pollutants, except at discharge points designated by WP UTILITIES, INC.

22.1.4 If any waters or wastes are discharged or are proposed to be discharged to the public sewers which waters contain the substances or possess the characteristics enumerated in Section 21.1.3, which in the judgment of WP UTILITIES, INC. may have a deleterious affect upon the sewage works, processes, equipment, or receiving water, or which otherwise create a hazard to life or constitute a public nuisance, WP UTILITIES, INC. may:

- (a) Reject the wastes.
- (b) Require pretreatment to reduce the waste to an acceptable condition in accordance with Federal Regulation 40 CFR Part 403 prior to discharge to the public sewers.
- (c) Require control over the quantities and rates of discharge; and/or

- (d) Require payment to cover the added cost of handling and treating the wastes not covered by existing taxes or sewer charges, under the provisions of ARTICLE 27.1.10.

If WP UTILITIES, INC. permits the pretreatment or equalization waste flows, the design and installation of the plant and equipment shall be subject to the review and approval of WP UTILITIES, INC. subject to the requirements of all applicable codes, ordinances and laws.

- 22.1.4 Grease, oil and sand interceptors shall be provided when, in the opinion of WP UTILITIES, INC., they are necessary for the proper handling of liquid wastes containing grease in excessive amounts or any flammable wastes, sand, or other harmful ingredients, except that such interceptors shall not be required for private living quarters or dwelling units. All interceptors shall be of a type and capacity approved by WP UTILITIES, INC. and shall be located as to be readily and easily accessible for cleaning and inspection. All interceptors shall be supplied and properly maintained continuously in satisfactory and effective operation by the owner at his expense.
- 22.1.5 Where preliminary treatment for flow equalizing facilities is provided for any waters, or wastes, the owner at his expense shall maintain them continuously in satisfactory and effective operation.
- 22.1.6 It shall be required by WP UTILITIES, INC. that the owner of any property serviced by a building sewer carrying industrial wastes, install a suitable control manhole. When deemed necessary, WP UTILITIES, INC. may require additional waste metering devices and other appurtenances in the building sewer to facilitate preservation, sampling and measurement of the waste. Such manhole shall be readily accessible for representatives of WP UTILITIES, INC. and safely located and shall be constructed in accordance with plans approved by WP UTILITIES, INC. The manhole shall be installed by the owner at his expense and shall be maintained by him so as to be safe and accessible at all times.
- 22.1.7 All measurements, tests, and analyses of the characteristics of waters and wastes to which reference is made in this ordinance shall be determined in accordance with the latest amendments to 40 CFR Part 136 "Guidelines Establishing Test Procedures for the Clean Water Act" as promulgated by the U.S. Environmental Protection Agency, and shall be determined at the control manhole provided for in Section 21.17, or upon suitable samples taken at said control manhole. Sampling shall be carried out by customarily accepted methods so as to reflect the effect of constituents upon the sewage works and to determine the existence of hazard of life, limb, and property. Where 40 CFR Part 136 does not contain sampling or analytical techniques for the pollutant in question, sampling and analysis shall be performed by using validated analytical methods or any other applicable sampling and analytical procedures approved by SCDHEC.
- 22.1.8 In order for WP UTILITIES, INC. to properly evaluate the effect of the waste on the system, an industry may be required to submit, along with the plans, etc.,

required in Section \_\_\_\_\_, an Industrial Waste Questionnaire summary describing maximum, minimum, and average wastewater characteristics.

- 22.1.9 Upon the promulgation of the Federal or State Categorical Pretreatment Standards for a particular industrial subcategory, that Standard, if more stringent than limitations imposed under this ordinance for sources in that subcategory, shall immediately supersede the limitations imposed under this ordinance. WP UTILITIES, INC. shall notify all affected users of the applicable reporting requirements under 40 CFR, Section 403.12 or other requirements.
- 22.1.10 Compliance Data Reporting Requirements. Within 90 days following the date for final compliance with applicable pretreatment standards or, in the case of a New Source, following commencement of the introduction of wastewater into WP UTILITIES, INC. sewer, any user subject to pretreatment standards and requirements shall submit to WP UTILITIES, INC. a report indicating the nature and concentration of all pollutants in the discharge from the regulated process which are limited by pretreatment standards and requirements and the average and maximum daily flow for these process units in the user facility which are limited by such pretreatment standards or requirements. The report shall state whether the applicable pretreatment standards or requirements are being met on a consistent basis and, if not, what additional O&M and/or pretreatment is necessary to bring the user into compliance with the applicable pretreatment standards or requirements. This statement shall be signed by an authorized representative of the industrial user, and certified to by a qualified professional.
- 22.1.11 Compliance Schedule Development. If additional pretreatment and/or O&M will be required to meet the Pretreatment Standards, a schedule by which the user will provide such additional pretreatment will be developed by WP UTILITIES, INC. The completion date in this schedule shall not be later than the compliance date established for any applicable Pretreatment Standard.

The following conditions shall apply to this schedule:

- (1) The schedule shall contain increments of progress in the form of dates for the commencement and completion of major events leading to the construction and operation of additional pretreatment required for the user to meet the applicable Pretreatment Standards (e.g., hiring an engineer, completing preliminary plans, completing final plans, executing contract for major components, commencing construction, completing construction, etc.).
- (2) No increment referred to in paragraph (1) shall exceed nine months.
- (3) Not later than 14 days following each date in the schedule and the final date for compliance, the user shall submit a progress report to the Superintendent including, as a minimum, whether or not it complied with the increment of progress to be met on such date and, if not, the date on which it expects to comply with this increment of progress, the reason for delay, and the steps being taken by the user to return the construction to the

schedule established. In no event shall more than nine months elapse between such progress reports to WP UTILITIES, INC.

22.1.12 Periodic Compliance Reports

- (1) Any user subject to a Pretreatment Standard after the compliance date of such Pretreatment Standard, or, in the case of a New Source, after commencement of the discharge into the POTW, shall submit to the approving authority during the months of March, June, September and December, unless required more frequently in the Pretreatment Standard or by the WP Utilities, Inc., a report indicating the nature and concentration of pollutants in the effluent which are limited by such Pretreatment Standards. In addition, this report shall include a record of all daily flows, which, during the reporting period, exceeded the average daily flow reported in paragraph (2) (c) of Section 4.03. At the discretion of the approving authority and in consideration of such factors as local high or low flow rates, holidays, budget cycles, etc., the approving authority may agree to alter the months during which the above reports are to be submitted.
- (2) The approving authority shall impose mass limitations on users which are using dilution to meet applicable Pretreatment Standards or Requirements, or in other cases where the imposition of mass limitations are appropriate. In such cases, the report required by sub-paragraph (1) of this paragraph shall indicate the mass of pollutants regulated by Pretreatment Standards in the effluent to the user. These reports shall contain the results of sampling and analysis of the discharge, including the flow and the nature and concentration or production and mass where requested by WP UTILITIES, INC., of pollutants contained therein which are limited by the applicable Pretreatment Standards. The frequency of monitoring shall be prescribed in the applicable Pretreatment Standard. All analysis shall be performed in accordance with procedures established by the approving authority pursuant to Section 304(g) of the Act and contained in 40 CFR, Part 136 and amendments thereto or with any other test procedures approved by the approving authority. Sampling shall be performed in accordance with the techniques approved by WP UTILITIES, INC.

22.1.13 Routine Self-Monitoring the wastewater of each industrial user is subject to routine self-monitoring and reporting requirements.

- (1) All sampling and analysis shall be in conformance with Section 21.1.8 of this ordinance.
- (2) If any industrial user samples more frequently than required by WP UTILITIES, INC., the results of such sampling shall also be reported to WP UTILITIES, INC.
- (3) If sampling indicates a violation of this ordinance or of any conditions of the Wastewater Discharge Permit, the user must notify WP UTILITIES,

INC. within 24 hours of becoming aware of the violation. The user shall also repeat the sampling and analysis and submit the results of the analysis to WP UTILITIES, INC. within 30 days.

22.1.14 Information and data on a user obtained from reports, questionnaires, permit applications, permits and monitoring programs and from inspections shall be available to the public or other governmental agency without restriction unless the user specifically requests and is able to demonstrate to the satisfaction of WP UTILITIES, INC. that the release of such information would divulge information, processes or methods of production entitled to protection as trade secrets of the user. When requested by the person furnishing a report, the portions of a report which might disclose trade secrets or secret processes shall not be made available for inspection by the public but shall be made available upon written request to governmental agencies for uses related to this ordinance, the National Pollutant Discharge Elimination System (NPDES) Permit, State Disposal System Permit and/or the Pretreatment Programs; provided; however, that such portions of a report shall be available for use by the State or any state agency in judicial review or enforcement proceedings involving the person furnishing the report. Any data concerning the nature and concentration of pollutants in the effluent shall not be considered confidential.

22.1.15 Spill Prevention and Countermeasures

- (a) Each user shall provide protection from accidental discharge of prohibited materials or other substances regulated by this ordinance. In addition, each Significant Industrial User (SIU) shall develop a plan to control spills and slug discharges. No SIU shall be permitted to introduce pollutants into the system until such a plan has been approved by WP UTILITIES, INC. Review and approval of such plans and operating procedures shall not relieve the industrial user from the responsibility to modify the user's facility as necessary to meet the requirements of this ordinance. The plan shall contain, at a minimum, the following elements:
  - (1) Description of discharge practices, including non-routine batch discharge;
  - (2) Description of stored chemicals;
  - (3) Procedures for immediately notifying the POTW of slug discharges, including any discharge that would violate a prohibition under Section 21.1.2 of this ordinance, with procedures for follow-up written notification within five days;
  - (4) If necessary, procedures to prevent adverse impact from accidental spills, including inspection and maintenance of storage areas, handling and transfer of materials, loading and unloading operations, control of plant site run-off, worker training, building of containment structures or equipment, measures for containing toxic organic



pollutants (including solvents), and/or measures and equipment for emergency response.

- (b) If identified in the plan or deemed necessary by WP UTILITIES, INC., facilities to prevent accidental discharge of prohibited materials shall be provided and maintained at the owner's cost and expense. Detailed plans showing facilities and operating procedures to provide this protection shall be approved by WP UTILITIES, INC. before construction of the facility.
- (c) In the case of an accidental discharge, it is the responsibility of the user to immediately telephone and notify the POTW of the incident. The notification shall include location of discharge, type of waste, concentration and volume, and corrective action. Within five (5) days following an accidental discharge, the user shall submit to WP UTILITIES, INC. a detailed written report describing the cause of the discharge and the measures to be taken by the user to prevent similar future occurrences. Such notification shall not relieve the user of any expense, loss, damage or other liability which may be incurred as a result of damage to the POTW, fish kills, or any other damage to person or property; nor shall such notification relieve the user of any fines, civil penalties, or other liability which may be imposed by this article or other applicable law.
- (d) A notice shall be permanently posted on the user's bulletin board or other prominent place advising all employees whom to call in the event of a dangerous discharge. Employers shall insure that all employees who may cause or suffer such a dangerous discharge to occur are advised of the emergency notification procedure.

#### 22.1.16 Notification of Hazardous Waste

- (a) Each industrial user shall notify the POTW, the EPA regional Waste Management Division Director, and State hazardous waste authorities in writing of any discharge into the POTW of a substance, which, if otherwise disposed of, would be a hazardous waste under 40 CFR Part 261. Such notification must include the name of the hazardous waste as set forth in 40 CFR Part 261, the EPA hazardous waste number, and the type of discharge (continuous, batch or other). If the industrial user discharges more than 100 kilograms of such waste per calendar month to the POTW, the notification shall also contain the following information to the extent such information is known and readily available to the industrial user: an identification of the hazardous constituents contained in the wastes, an estimation of the mass and concentration of such constituents in the waste stream expected to be discharged during that calendar month, and an estimation of the mass of constituents in the waste stream expected to be of the mass of constituents in the waste stream expected to be discharged in the following twelve months. All notifications must take place within 180 days of the effective date of this rule. Industrial users who commence discharging after the effective date of this rule shall

provide the notification no later than 180 days after the discharge of the listed or characteristic hazardous waste. Any notification under this paragraph need be submitted only once for each hazardous waste discharged. However, notifications of changed discharges must be submitted under Section \_\_\_\_\_. The notification requirement in this section does not apply to pollutants already reported under the self-monitoring requirements of Section 21.1.10 (d).

- (b) Dischargers are exempt from the requirements of paragraph (a) of this section during a calendar month in which they discharge no more than fifteen kilograms of hazardous wastes, unless the wastes are acute hazardous wastes as specified in 40 CFR 261.30(d) and 261.33(e). Discharge of more than fifteen kilograms of non-acute hazardous wastes in a calendar month, or any quantity of acute hazardous wastes as specified in 40 CFR 261.30(d) and 261.33(e), requires a one-time notification. Subsequent months during which the industrial user discharges more than such quantities of any hazardous waste do not require additional notification.
- (c) In the case of any new regulations under Section 3001 of RCRA identifying additional characteristics of hazardous waste or listing any additional substance as hazardous waste, the industrial user must notify the POTW, the EPA Regional Waste Management Waste Division Director, and State hazardous waste authorities of the discharge of such substance within 90 days of the effective date of such regulations.
- (d) In the case of any notification made under this section, the industrial user shall certify that it has a program in place to reduce the volume and toxicity of hazardous wastes generated to the degree it has determined to be economically practical.

## **Article 23.**

### **REMOVAL, TRANSPORTATION AND DISPOSING OF SCAVENGER WASTES**

- 23.1.1 Persons desiring to discharge scavenger wastes into the sewage treatment works shall be required to obtain a written permit from WP UTILITIES, INC. Scavenger wastes shall mean putrid or offensive matter, the contents of all privies, septic tanks, and cesspools. All other materials and substances, chemicals or chemical compounds and/or industrial wastes will not be permitted to be discharged into the public sewerage system except as heretofore provided. Said permit shall be purchased from WP UTILITIES, INC. and shall be valid for one year, except as hereinafter provided. The discharge of these wastes shall be made only at a location in the sewage treatment works as shall be designated on said permit by WP UTILITIES, INC.
- 23.1.2 Scavenger wastes will be admitted into the sewerage system only by approval of WP UTILITIES, INC. and subject to payment of fees or charges fixed by WP UTILITIES, INC. Such a fee or charge is defined in Article 25 and shall be based upon the full capacity of each scavenger vehicle for each discharge.
- 23.1.3 The applicant shall be the owner of the vehicle for which a permit is applied. Any false, untruthful or misleading statements in any application for a permit or in any paper submitted in support of said application will invalidate the permit. Such a permit may be suspended or revoked at any time by WP UTILITIES, INC. for willful, continued or persistent violations of these rules and regulations or upon such other grounds as WP UTILITIES, INC. may deem proper.
- 23.1.4 All equipment (trucks, tanks, pumps, and hose) used for the collection and/or transportation of scavenger wastes shall be modern equipment in good repair. When more than one vehicle is used by an applicant, each vehicle shall bear an identifying number. WP UTILITIES, INC. shall refuse a permit to any person utilizing equipment other than above.
- 23.1.5 All applicants for a permit shall furnish the following information with each application:
- ? Name and address of applicant.
  - ? Volume of scavenger waste for each numbered vehicle.
  - ? Number of scavenger vehicles in collection service.
- 23.1.6 All fees provided by this Article and as defined in Article 27 shall be paid to WP UTILITIES, INC. in advance.

## **Article 24.**

### **POWERS AND AUTHORITY OF INSPECTORS**

- 24.1.1 WP UTILITIES, INC. or duly authorized representatives of WP UTILITIES, INC. bearing proper credentials and identification shall be permitted to enter all properties for the purpose of inspection, observation, measurement, sampling, and testing in accordance with the provisions of this ordinance. WP UTILITIES, INC. or its representatives shall have no authority to inquire into any processes, including metallurgical, chemical, oil refining, ceramic, paper or other industries beyond that point having a direct bearing on the kind and source of discharge to the sewers or waterways or facilities for waste treatment.
- 24.1.2 While performing the necessary work on private properties referred to in Section 24.1.1 above, WP UTILITIES, INC. or duly authorized representatives of WP UTILITIES, INC. shall observe all safety rules applicable to the premises established by the company, and the company shall be held harmless for injury or death to WP UTILITIES, INC. representative. WP UTILITIES, INC. shall indemnify the company against loss or damage to its property by WP UTILITIES, INC. representative and against liability claims and demands for personal injury or property damage asserted against the company and growing out of the gauging, sampling operations, except as such maybe caused by negligence or failure of the company to maintain safe conditions as required in Section 22.1.7.
- 24.1.3 WP UTILITIES, INC. or duly authorized representatives of WP UTILITIES, INC. bearing proper credentials and identification shall be permitted to enter all private properties through which WP UTILITIES, INC. holds a duly negotiated easement for the purposes of, but not limited to, inspection, observation, measurement, sampling, repair and maintenance of any portion of the treatment works lying within said easement. All entry and subsequent work, if any, on said easement shall be done in full accordance with the terms of the duly negotiated easement pertaining to the private property involved.

## **Article 25.**

### **SEWER USE CHARGES**

- 25.1.1 The permit and inspection fee required prior to the commencement of construction of a private sewage disposal system other than a septic tank, privy, privy vault, or cesspool for a single family dwelling.
- 25.1.2 The permit and inspection fee required for a building sewer to serve a residence, apartment unit or commercial establishment prescribed under Article 22 shall be as directed by WP UTILITIES, INC.
- 25.1.3 The permit and inspection fee required for an establishment producing industrial waste as prescribed in Article 21 shall be as directed by WP UTILITIES, INC.
- 25.1.4 Persons desiring to discharge scavenger waste into the treatment works shall be required to obtain a permit from WP UTILITIES, INC. This permit shall be valid for one year. The annual permit fee shall be as directed by WP UTILITIES, INC.
- 25.1.5 In addition to the annual permit required in Section 25.1.4, a fixed fee as directed by WP UTILITIES, INC. shall be paid to WP UTILITIES, INC. for each discharge of a scavenger vehicle into WP UTILITIES, INC. treatment works.
- 25.1.6 Persons desiring to connect a building sewer to WP UTILITIES, INC. treatment works shall pay to WP UTILITIES, INC. a tap fee for each residence, commercial establishment or apartment unit. The fee for taps onto WP UTILITIES, INC. treatment works for industrial wastes shall be the actual cost to WP UTILITIES, INC. but shall not be less than the building sewer taps fees.
- 25.1.7 For sewer taps outside WP UTILITIES, INC. service area, the fee for taps onto WP UTILITIES, INC. system shall be as directed by WP UTILITIES, INC.
- 25.1.8 In all cases where residential, commercial, or industrial premises or facilities are connected to WP UTILITIES, INC. sewage disposal system and are not supplied water by WP UTILITIES, INC., WP UTILITIES, INC. shall require that the water used be measured by a water meter acceptable to it and that sewer service charged be assessed against that quantity and quality of sewage flow in exactly the same manner as if the water were being supplied by WP UTILITIES, INC. The cost of the installation and maintenance of the water meter will be borne by the customer exclusively.
- 25.1.9 The sewer service charge for standard sewage waste as defined in Section 25.1.10 shall be as directed by WP UTILITIES, INC.

The sewer service charge shall be paid on a monthly basis. A ceiling shall apply for sewer service charges on single unit

residential customers based on a maximum of twelve thousand (12,000) gallons of water usage for the month.

25.1.10 A schedule of surcharges has been established which takes into consideration the total costs for the treatment of wastes. In this schedule, a BOD 5 concentration of 0 - 335 ppm, a total suspended solids concentration of 0 to 335 ppm, and a pH in the range of 6.0 - 9.0 units is considered to be a standard sewage waste. Any wastewaters having a concentration in excess of the stated limits is subject to a surcharge in accordance with a schedule set forth by WP UTILITIES, INC. These surcharges are based on the equitable recovery of wastewater treatment costs as required for those municipalities receiving federal assistance for the construction of wastewater treatment facilities and is in compliance with the regulations of 40 CFR Part 35. The issuance of this surcharge schedule does not in itself permit, nor does it imply, that any such high strength wastewater will be received by WP UTILITIES, INC. for treatment. In each instance, the actual acceptance of the waste for treatment is subject to review and evaluation by WP UTILITIES, INC. In some instances pretreatment may be required before acceptance of the wastewater for final treatment by WP UTILITIES, INC.

- (a) Capital cost surcharges will be charged to industrial users, which are allowed limits higher than standard sewage waste. These surcharges will be based on current replacement costs of percentage of capacity allocated. These calculations are subject to change and may be obtained from the Utility Department.
- (b) O&M surcharge rates will be charged monthly based on actual discharge concentration excess above standard limits. The rates are based on current costs and are subject to be reviewed and amended when deemed necessary.
- (c) Penalty surcharge rates may be applied if discharge concentration is in excess of permit limits and gross negligence by the industry or treatment interferences has occurred at the WWTP. These rates are as follows:

- (1) \$0.50/lb BOD over permits limits
- (2) \$0.40/lb TSS over permits limits
- (3) \$0.50/lb O&G over permit limits

Payment of penalty surcharges does not absolve an industrial user from permit violations. A violation occurs any time a permit limit is exceeded.

## **Article 26.**

### **ADMINISTRATIVE ENFORCEMENT AND PENALTIES**

- 26.1.1 WP UTILITIES, INC. may suspend the wastewater treatment service and/or a wastewater contribution permit when such suspension is necessary, in the opinion of WP UTILITIES, INC., on order to stop an actual or threatened discharge which presents or may present an imminent or substantial endangerment to the health or welfare of persons, to the environment, causes interference to the POTW or causes WP UTILITIES, INC. to violate any condition of its NPDES permit.

Any person notified of a suspension of the wastewater treatment service and/or the wastewater contribution permit shall immediately stop or eliminate the contribution. In the event of a failure of the person to comply voluntarily with the suspension order, WP UTILITIES, INC. shall take such steps as deemed necessary including immediate severance of the sewer connection, to prevent or minimize damage to the POTW system or endangerment to any individuals. WP UTILITIES, INC. shall reinstate the wastewater contribution permit and/or the wastewater treatment service upon proof of the elimination of the non-complying discharge. A detailed written statement submitted by the user describing the causes of the harmful contribution and the measures taken to prevent any future occurrence shall be submitted to WP UTILITIES, INC. within 15 days of the date of occurrence.

- 26.1.2 When authorized representatives of WP UTILITIES, INC. finds that a user has violated, or continues to violate, any provision of this ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, authorized personnel of WP UTILITIES, INC. May serve upon that user a written Notice of Violation. Within five (5) days of the receipt of this notice, an explanation of the violation and a plan for the satisfactory correction and prevention thereof, to include specific required actions, shall be submitted by the user to WP UTILITIES, INC. Submission of this plan in no way relieves the user of liability for any violations occurring before or after receipt of the Notice of Violation. Nothing in this section shall limit the authority of the Pretreatment Coordinator or any other Authorized Representative of WP UTILITIES, INC. to take action, including emergency actions or any other enforcement action without first issuing a Notice of Violation. Authorized representatives of WP UTILITIES, INC. are indicated in the Enforcement Response Guide section of the Pretreatment Program.

- 26.1.3 Authorized personnel may enter into Consent Orders, assurances of voluntary compliance, or other similar documents establishing an agreement with any user responsible for noncompliance. Such documents will include specific action to be taken by the user to correct the noncompliance within a time period specified by the document. Such documents shall have the same force and effect as the

administrative orders issued pursuant to Sections 9.05 and 9.06 of this ordinance and shall be judicially enforceable.

- 26.1.4 WP UTILITIES, INC. may order a user which has violated, or continues to violate, any provision of this ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, to appear before WP UTILITIES, INC. and show cause why the proposed enforcement action should not be taken. Notice shall be served on the user specifying the time and place for the meeting, the proposed enforcement action, the reasons for such action, and a request that the user show cause why the proposed enforcement action should not be taken. The notice of the meeting shall be served personally or by registered or certified mail (return receipt requested) at least fifteen (15) days prior to the hearing. Such notice may be served on any authorized representative of the user. A show cause hearing shall not be a bar against, or prerequisite for, taking any other action against the user.
- 26.1.5 When WP UTILITIES, INC. finds that a user has violated, or continues to violate, any provision of this ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, WP UTILITIES, INC. may issue an order to the user responsible for the discharge directing that the user come into compliance within a specified time. If the user does not come into compliance within the time provided, sewer service may be discontinued unless adequate treatment facilities, devices, or other related appurtenances are installed and properly operated. Compliance orders also may contain other requirements to address the noncompliance, including additional self-monitoring and management practices designed to minimize the amount of pollutants discharged to the sewer. A compliance order may not extend the deadline for compliance established for a pretreatment standard or requirement, nor does a compliance order relieve the user of any violation, including any continuing violation. Issuance of a compliance order shall not be a bar against, or a prerequisite for, taking any other action against the user.
- 26.1.6 When WP UTILITIES, INC. finds that a user has violated, or continues to violate, any provision of this ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, or that the user's past violations are likely to recur, WP UTILITIES, INC. may issue an order to the user directing it to cease and desist all such violations and directing the user to:
- (a) Immediately comply with all requirements; and
  - (b) Take such appropriate remedial or preventive action as may be needed to properly address a continuing or threatened violation, including halting operations and/or terminating the discharge.

Issuance of a cease and desist order shall not be a bar against, or a prerequisite for, taking any other action against the user.



- 26.1.7 Administrative Fines:
- (a) When WP UTILITIES, INC. finds that a user has violated, or continues to violate, any provision of this ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, WP UTILITIES, INC. may fine such user. Such fines shall be assessed on a per violation, per day basis. In the case of monthly or other long-term average discharge limits, fines shall be assessed for each day during the period of violation.
  - (b) Unpaid charges, fines and penalties shall, after 30 calendar days, be assessed an additional penalty of ten percent (10%), of the unpaid balance, and additional penalties shall be added for each month thereafter, until paid. Lien against the user's property will be sought for unpaid charges, fines, and penalties.
  - (c) Users desiring to dispute such fines must file a written request for WP UTILITIES, INC. to reconsider the fine along with full payment of the fine amount within 15 days of being notified of the fine. Where a request has merit, WP UTILITIES, INC. may convene a hearing on the matter. In the event the user's appeal is successful, the payment together with any interest accruing thereto shall be returned to the user. WP UTILITIES, INC. may add the costs of preparing administrative enforcement actions, such as notices and orders, to the fine.
  - (d) Issuance of an administrative fine shall not be a bar against, or a prerequisite for, taking any other action against the user.
  - (e) WP UTILITIES, INC. shall have the authority to seek or assess minimum penalties in at least the amount of \$1000.00 for each offense by any user who is found to have violated an order of WP UTILITIES, INC. Board or who willfully or negligently failed to comply with any provision of this ordinance and the orders, rules, regulations and permits issued hereunder. Each day on which a violation shall occur or continue shall be deemed a separate and distinct offense. In addition to the penalties provided herein, WP UTILITIES, INC. may recover reasonable attorney's fees, court costs, court reporters' fees and other expenses of litigation by appropriate suit at law against the user found to have violated this ordinance or the rules, regulations and permits issued hereunder.

26.1.7 Any user who violates the following conditions of this ordinance, or applicable state and federal regulations, is subject to having his permit revoked in accordance with the procedures of Article 22:

- (a) Failure of a user to factually report the wastewater constituents and characteristics of his discharge;
- (b) Failure of the user to report significant changes in operations, or wastewater constituents and characteristics;

- (c) Refusal of reasonable access to the user's premises for the purpose of inspection or monitoring; or
- (d) Violation of conditions of the permit.
- (e) Violations of the standards in Article 22.
- (f) Misrepresentation or failure to fully disclose all relevant facts in the wastewater discharge permits application.
- (g) Falsifying self-monitoring reports.
- (h) Tampering with monitoring equipment.
- (i) Failure to meet effluent limitations.
- (j) Failure to pay fines.
- (k) Failure to pay sewer charges.
- (l) Failure to meet compliance schedules.
- (m) Failure to complete a wastewater survey or the wastewater discharge permits application.
- (n) Failure to provide advance notice of the transfer of business ownership of a permitted facility.
- (o) Violation of any pretreatment standard or requirement, or any terms of the wastewater discharge permit or this ordinance.

Such user will be notified of the proposed termination of its discharge and be offered an opportunity to show cause under Section 26.1.4 of this Article why the proposed action should not be taken. Exercise of this option by WP UTILITIES, INC. shall not bar to, or prerequisite for, taking any other action against the user.

- 26.1.8 Any person who knowingly makes any false statements, representation or certification in any application, record, report, plan or other document files or required to be maintained pursuant to this ordinance, or wastewater contribution permit, or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required under this ordinance, upon conviction, be punished by a fine of not more than \$1,000 or by imprisonment for not more than six (6) months or by both.

26.1.9 WP UTILITIES, INC. shall annually publish in the largest daily newspaper of local distribution a list of the industrial discharger(s), which are in significant non-compliance with any of the pretreatment requirements or standards during the twelve (12) previous months. The notification shall also summarize any enforcement actions taken against the industrial discharger(s) during the same twelve (12) months.